ROADS AND STREETS

HIGHWAYS BRIDGES AIRFIELDS HEAVY CONSTRUCTION

MARCH 1953

THE WILLIAM BROS COMPANY uses Timken bearings on the wheel axles of its Roll-O-Pactor to insure free rolling under maximum load.

Compactor solves pressing problem for contractors... *with help of TIMKEN® bearings*

ITS exclusive "Rocking Beam" construction helps this patented Bros Roll-O-Pactor compact over 1,200 yards of dirt per hour. This new development distributes the load evenly on all tires and keeps them all squarely in contact with the ground even when riding slopes up to 19°. To allow free rocking and wheel oscillation, Bros engineers mount their "Rocking Beam" on Timken® tapered roller bearings.

The tapered construction of Timken bearings enables them to take radial and thrust loads in any combination. Line contact between rollers and races gives them extra load-carrying capacity too. Shock loads are easily carried.

Closures are made more effective because Timken bearings hold shafts and housings concentric. Lubricant is kept in—dirt, dust and grime kept out.

And the true rolling motion and incredibly smooth finish of Timken bearings practically eliminate friction.

Backed by over half a century of bearing research, Timken bearings are first choice throughout industry. Make sure you specify Timken bearings for the machinery you build or buy. Look for the trade-mark "Timken" stamped on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN

TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ⬮ AND THRUST →⬮← LOADS OR ANY COMBINATION

Dozens of Uses · Thousands of Users

Prove Ability, Versatility of the Model D

The thousands of satisfied owners are still finding new uses for the able and versatile Allis-Chalmers Model D Grader. It has proved again and again that it has the power and capacity to do outstanding work on both construction and maintenance.

Usefulness of the Model D is multiplied by several easily mounted attachments: hydraulically controlled rear-end loader, shoulder maintainer that is interchangeable with the loader, scarifier, both V-type and blade snowplows.

MORE POWER, MANY FEATURES, LOW COST

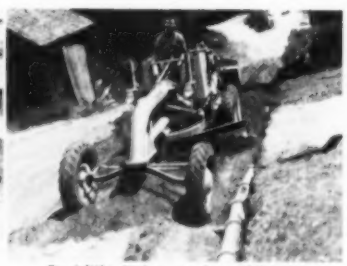
For even greater performance ability, the Model D's power has been boosted to 40 brake hp. With its added power and many big-grader features such as tandem drive, ROLL-AWAY Moldboard, tubular frame and hydraulic blade lift — the Model D's original cost still is but one-third that of a large grader. Operating costs are low, too.

Your Allis-Chalmers dealer will be glad to demonstrate what the versatile, economical Model D can do for you.

ROLL-AWAY is an Allis-Chalmers trademark.

40 Brake hp. • 8,800 lb. (bare) • Four speeds forward to 25.6 mph., reverse to 3.3 mph.

Handles light construction on streets, roadways, etc.



Backfills ditches, packs and levels ground, loads excess dirt to trucks.

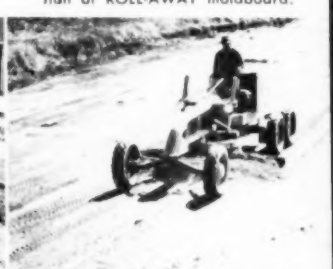
Scarifies, with plenty of down pressure, accurate hydraulic control.

Mixes thoroughly, with rolling action of ROLL-AWAY moldboard.

Cuts and cleans ditches, slopes banks, grades shoulders.

Loads sand, dirt, snow—any material — to trucks.

Finish grades between forms on road and street construction.



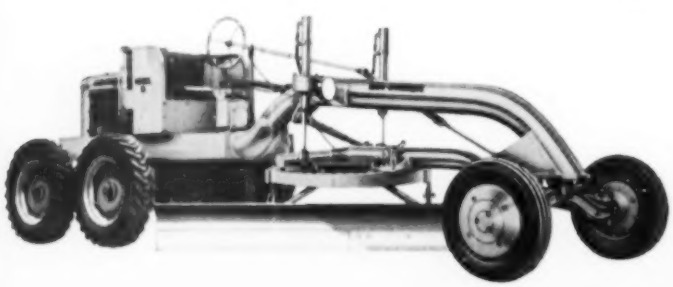
Levels for home building, parking lots, play areas, etc.

Terraces, builds diversion ditches, does miscellaneous grader work.

Loads sand, gravel, dirt, any material, with ⅝-yd. bucket.

Rough grades, spreads and cleans up on street or road construction.

Landscapes, grades lawns, slopes, ditches around housing projects.



Designed for your jobs

Built to take it

Easy to operate

Easy to service

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

What are the Advantages of a Galvanized Steel Culvert?

Culvert pipe made of galvanized sheet steel weighs less per foot and comes in longer sections than pipe made of other materials. A galvanized steel culvert can be unloaded and placed in trenches with ordinary lifting equipment. It is easier to align, and it requires fewer and simpler field joints.

Besides these advantages, galvanized sheet-steel culvert pipe has the strength and flexibility to withstand impact or vibration. It is low in initial cost. It is economical to ship.

Thousands of drainage installations in highways, airfields, mines, parks and golf courses have shown the kind of job galvanized steel culverts will do. And while no one would claim that steel is the only material that can be used successfully for all types of large drainage pipe, experience has proved that it is an excellent choice for most culvert installations.

Bethlehem does not fabricate culvert pipe, but does manufacture Beth-Cu-Loy galvanized steel sheets used by pipe fabricators. This steel contains 0.20 to 0.30 pct copper, and meets the specifications for culverts set by the American Association of State Highway Officials.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETH-CU-LOY *GALVANIZED* CULVERT SHEETS

ROADS AND STREETS

MARCH, 1953 • VOL. 96 • No. 3

Roads and Streets represents 60 years of continuous publishing in the highway field; combined with Engineering & Contracting and Good Roads Magazines, established in 1892

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A magazine devoted to the design, construction, maintenance and operation of highways, streets, bridges, bridge foundation and grade separations, and to the construction and maintenance of airports.

Coming Articles

Heavy Relocation Based On Economic Study

How Oregon engineers weighed economic benefit factors against estimated costs in determining on relocation of section of U.S. 99.

Contractors Face Big Year on N. Y. Thruway

Highlights of construction push on this 500-mile superhighway, for which work approaching two hundred million dollars is on the contractors' books.

Low Cost Rolled Curb Cuts Pavement Cost

How a typical Detroit contractor does quality job on concrete pavement, using a simplified design which has figured largely in 13,000,000 sq. yd. of new streets in the Detroit area, since the War.

Winter Hauling, Aggregate Blending, on Minnesota Job

Megarry Bros. beat the spring thaw, saved road damage from hauling, and got an early start on Minnesota resurface project, which also involved blending of coarse pit material to obviate costly wastage of excess fines to meet gradation requirements.

Also . . .

Hardfacing applications that reduce cost of equipment repairs and parts . . . Progress charts for construction jobs . . . Minnesota improves its seal coating methods . . . Core for high, rutted shoulders which bother maintenance departments . . . How asphalt membrane subgrade envelope is performing on pioneer installation at Houston . . . What cities are doing to improve their streets . . . Report on AGC meeting at Miami, and spring road meetings.

•

HAROLD J. McKEEVER, Editorial Director
C. T. Murray, Managing Editor
Col. V. J. Brown, Associate Editor

In This Issue

	Page
Roads and Streets in the News	65
Briefly Noted (Editorial)	68
Reversed Dozer Blade Finegrades Slope	69
Roadbuilders (ARBA) Meet at Boston	70
Tunneling Through a Canyon Wall	73
By John E. Witte, Resident Engineer, California Division of Highways	
2800 Attend AED Meeting	78
Job and Equipment Ideas	80
Chrysler Building 140-mph Test Track	82
Maryland Begins First Prestressed Concrete Bridge	84
Must Ohio Turnpike Take Bids on Both Paving Types?	85
Effect of Delay in Applying Concrete Curing Membrane	86
By Bailey Tremper, Supervision Materials and Research Engineer, California Division of Highways	
Research Board Studies Trucking Economies	89
Ground Your Cranes!	92
New Technical Literature	93
Misrepresentation Justifies Rescission	95
By Albert Woodruff Gray	
BITUMINOUS ROADS AND STREETS	
Cover Scene—Route 2, near Shelburne, Mass.	
Views and Comments	103
By H. G. Nevitt	
58-Mile Desert Job in One Contract	104
Heavy Discs Under Grader Helped Scarify Old Mat	109
Reworking of Bituminous Pavements	110
By H. H. Harris, Maintenance Engineer, Virginia Department of Highways	
Asphaltic Concrete Testing Methods Appraised	113
With the Manufacturers and Distributors	126
What's New in Equipment and Materials (See also pp 116-125)	129
Why Not Store Facts and Ideas in a Real Construction Data File	138
By E. T. Nettleton, Associate Highway Engineer, State Highway Department of Connecticut	
Clearing House	141

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What kind of tires can your jobs afford ?

THE kind that only great resources and great practical experience can build. The kind that are specifically designed for your types of jobs and equipment. The kind that are built *sparing nothing* to bring you the greatest traction or flotation, the greatest durability, the longest wear.

In short, the kind of tires that will keep your jobs rolling—save you time and money in every way!

No truly cost-wise operator can afford a lesser tire—and that's why more tons, the world over, are hauled on Goodyears than on any other make!

It stands to reason that Goodyear, who has built more tires for more purposes than anyone else on earth, can help cut *your* operating costs, too!

Goodyear, Truck Tire Department,
Akron 16, Ohio.

FOR EACH JOB, THERE'S A COST-CUTTING GOODYEAR TIRE!

Sure-Grip, All-Weather– T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

GOODYEAR

We think you'll like "THE GREATEST STORY EVER TOLD" – every Sunday – ABC Radio Network – THE GOODYEAR TELEVISION PLAYHOUSE – every other Sunday – NBC TV Network

FLECO ROCK RAKE PILES CONCRETE SLABS WITH EASE

Caterpillar D7 Tractor equipped with Fleco Rock Rake rips up concrete slabs on highway construction job near Jacksonville, Florida. Owner is Duval Engineering & Contracting Co. of Jacksonville.

As a part of the construction of a super highway system in the Jacksonville area, it was necessary to rip up an eight inch thick four lane concrete road. The flow of traffic was to be interrupted as little as possible and because the new pavement was to be laid down on the same right-of-way, it was desirable to minimize the disturbance of the roadbed and movement of dirt.

Following a skullcracker which was dropped at four to six foot intervals, the ruggedly constructed Fleco Rock Rake mounted on a Caterpillar D7 Tractor ripped up and piled these concrete slabs weighing up to three tons apiece, in dirt free windrows on one side of the road at the rate of 100 feet an hour. The manganese alloy cast steel teeth, mounted on the heavy duty frame, allowed the dirt to sift through leaving a smooth, level, slab free surface. The roadbed was ready for traffic and remained in use until work was started on the new surfacing two weeks later.

An additional advantage of the Fleco Rock Rake is in the special curve of the teeth which gives it suction and makes it possible to get in under and lift up the heavy slab without the necessity of a deep dirt moving penetration to get started.

Disposing of the windrows was faster and easier too because the loaders weren't loading dirt with the slab, so each truck load hauled away was all pay load.

Your Fleco "Caterpillar" dealer will be glad to show you many other uses for the versatile Fleco Rock Rake. Give him a call.

FLECO CORPORATION, JACKSONVILLE, FLORIDA

FLECO

REG. U. S. PAT. OFF.

STUMPERS • BRUSH RAKES
TREE CUTTERS • ROOT CUTTERS
ROOT RAKES • TREEDOZERS
UNDERCUTTERS • ROCK RAKES

Tough Going-

but DW20s maintain schedule at Old Hickory

Big loads in tough going are easy for this Cat DW20-No. 20 unit, one of 8 on the job at Old Hickory. The Lima dragline is powered by a Caterpillar D17000 Engine.

The Old Hickory Lock and Dam project, in Tennessee, calls for moving 1,700,000 yards of heavy, fat clay. Roads are spongy, grades are steep. But H. N. Rodgers & Sons Co., of Memphis, have kept up to schedule.

The big reason is their use of Caterpillar DW20 Tractors and No. 20 Wagons. With 225 honest horsepower available at the flywheel, these big yellow wheel tractors can pull through heavy clay cuts without excessive engine strain, and they travel 26 mph. on the haul.

The No. 20 Wagon is a perfectly matched unit, with 20-cu.-yd. heaped capacity. That means up to 25 tons in heavy material. The wagon is an easy target to hit with the shovel, and positive controls make possible either instantaneous or windrow dumping.

The Rodgers firm has been using Caterpillar equipment for 23 years, and the fact that 90% of their present machines are Cats shows what they think of them.

Your Caterpillar Dealer will gladly demonstrate the DW20-No. 20 team for you in any kind of hauling you choose. And he backs it with genuine Caterpillar parts and service—the only kind that gives you genuine Caterpillar performance. See him today!

CATERPILLAR, PEORIA, ILLINOIS

CATERPILLAR

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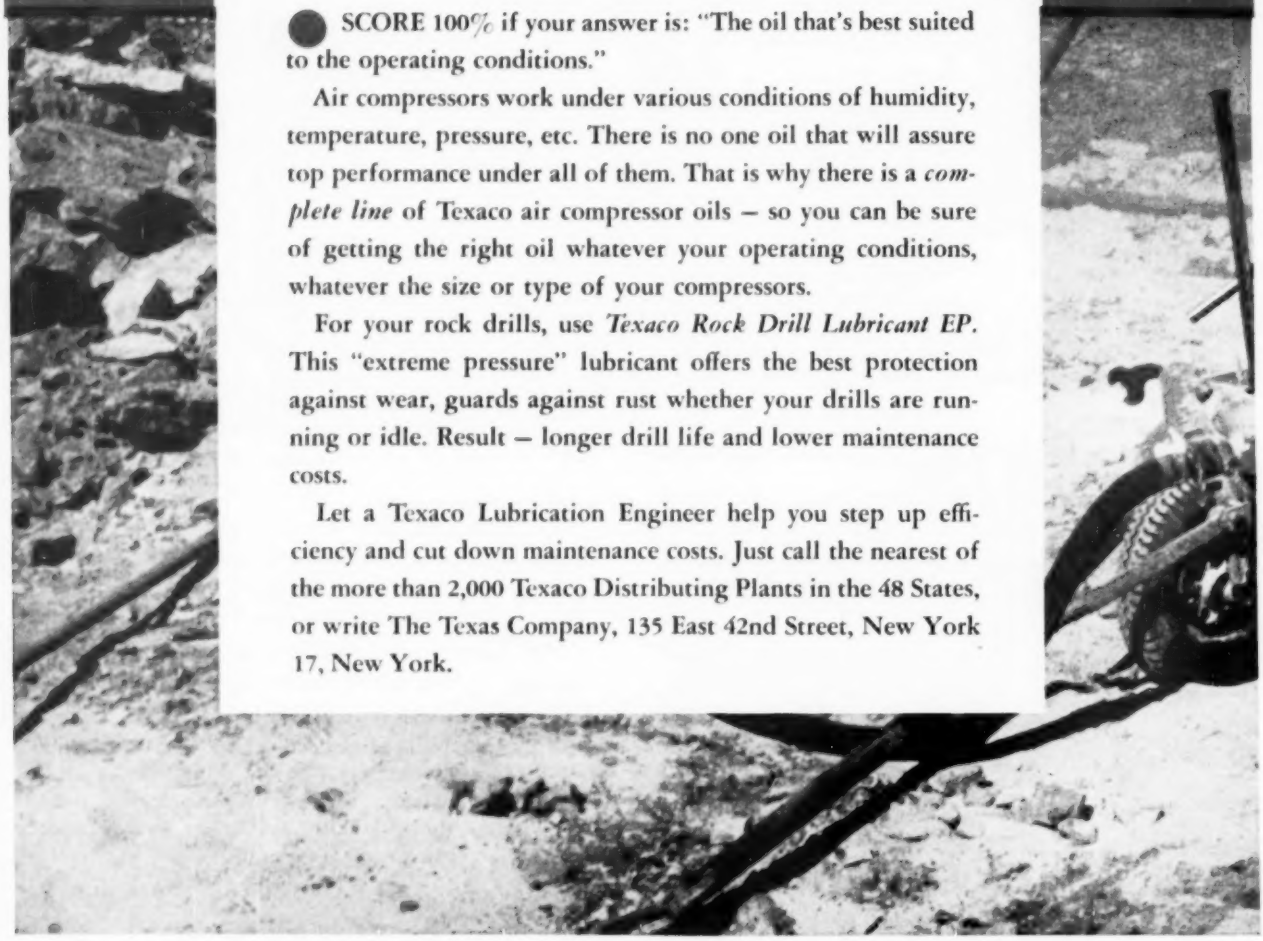
DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

WHAT OIL IS BEST HERE?



● SCORE 100% if your answer is: "The oil that's best suited to the operating conditions."

Air compressors work under various conditions of humidity, temperature, pressure, etc. There is no one oil that will assure top performance under all of them. That is why there is a *complete line* of Texaco air compressor oils – so you can be sure of getting the right oil whatever your operating conditions, whatever the size or type of your compressors.

For your rock drills, use *Texaco Rock Drill Lubricant EP.* This "extreme pressure" lubricant offers the best protection against wear, guards against rust whether your drills are running or idle. Result – longer drill life and lower maintenance costs.

Let a Texaco Lubrication Engineer help you step up efficiency and cut down maintenance costs. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, New York.

TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE, on television Tuesday nights. METROPOLITAN OPERA radio broadcasts Saturday afternoons.

TEXACO

TEXACO

TEXACO SIMPLIFIED LUBRICATION PLAN Save time and money with the Texaco Simplified Lubrication Plan. Handle all your major lubrication with *only six* Texaco Lubricants. Prevent confusion . . . keep equipment on the job . . . keep maintenance costs down. Ask your Texaco Lubrication Engineer for full details.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

Contractors...

start your jobs now!

Protect your early start against costly bog-downs with a HYSTER Towing Winch mounted on a CATERPILLAR diesel tractor

You can get on the job early this year if you equip at least one tractor on each project with a Hyster Towing Winch (individual job requirements will determine the number of winches required). The winch's powerful line pull, plus the tractor's mobility, **makes sure all** your equipment is working **all** the time. With downtime kept to a minimum, maximum profits are assured.

Winching heavy equipment through mud, out of bog-holes and over swampy ground requires mobility, reach and pull. Long reach and mobility enables the tractor to walk to firmer footing where full engine power can be applied **through** the winch to the load. **A Hyster Towing Winch greatly increases tractor pull—by as much as 90% over drawbar pull.** That's why contractors depend on Hyster Towing Winches to keep all kinds of construction jobs on schedule.

Hyster Towing Winches are rugged and dependable for heavy duty service. They are specifically designed for "balanced", matched mounting on Caterpillar-built tractors. See your Caterpillar-Hyster dealer for information, or write to: **Hyster Company, 2995 N. E. Clackamas St., Portland 8, Oregon.**

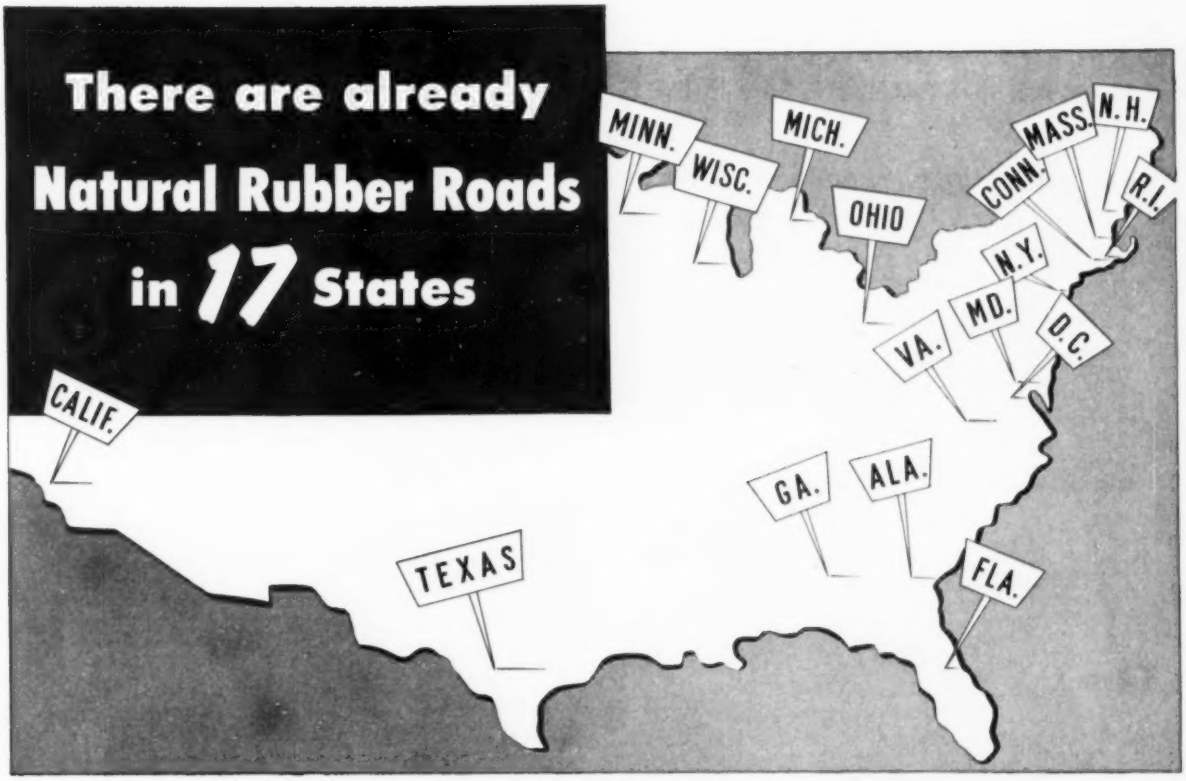
Hyster Towing Winches Have Many Cost-Saving Uses!

THERE'S PROFIT IN HYSTER LIFT AND PULL

There are over 40,000 Satisfied Hyster Winch Owners!

HYSTER

HYSTER COMPANY, Portland, Oregon • Peoria, Illinois • Hyster's line of Contractor Equipment includes — Winches • Cranes 2- and 3-Drum Hoists • Grid Roller • Hystaway Excavator-Crane (half-yard Shovel, Backhoe, Dragline, Clamshell, Crane, Pile Driver).



Many More Rubber Roads Planned for 1953

WRITE FOR FREE BOOKLET

Illustrated 36-page booklet, "STRETCHING HIGHWAY DOLLARS WITH RUBBER ROADS," tells the story of test natural rubber roads laid since 1949 in the U. S. and Canada. You may have a free copy by writing to the Natural Rubber Bureau.

☆ ☆ ☆

SEE NEW FILM—A new 30-minute motion picture on rubber roads, describing the work of the Natural Rubber Bureau Research Laboratory and showing rubber road installations in the U. S. Arrangements to obtain the film for a free showing may be made with the Natural Rubber Bureau.

Natural rubber powder, when mixed with asphalt for highway paving, gives promise of providing roads that last longer, require less repair, and help stretch highway dollars.

Highway engineers are enthusiastic over results to date in test roads of natural rubber-asphalt paving. So far, stretches have been laid in 17 states in all sections of the country.

Now is the time for you to plan a road using natural rubber. Suppliers report there will be plenty of natural rubber powder available for road construction in the U. S. this year and orders for any quantity can be filled promptly.

Technical data on laying natural rubber-asphalt paving is offered, without cost or obligation, by the Natural Rubber Bureau. If you are interested in laying a test road with natural rubber, simply write to the Bureau, giving us an idea of the size of the installation and your paving specifications. Our highway engineers will send you the necessary information and answer any questions you may have.

Natural Rubber Bureau

1631 K STREET, N.W., WASHINGTON 6, D.C.

Natural Rubber Bureau Research Laboratory, Rosslyn, Virginia

New carrier permits GRADALL to go more places—do more jobs!

NEW GRADALL CARRIER

- **Rugged, properly balanced design**
- **Frame extra heavy 8" x 10" H beam, full length**
- **Tip proof—without outriggers**
- **Short turning radius—162 in. wheelbase**
- **Powerful 427 cu. in., 140 h.p. gasoline engine**
- **4 or 6 wheel drive**
- **Remote control of carrier from operator's cab (optional)**
- **Gross weight 40,000 lbs.—chassis 12,550 lbs.**

ON MANY DIFFERENT KINDS of construction and maintenance work—even where working conditions make it impossible to use any other machine—the ruggedness, fast action, and extreme maneuverability of the multi-purpose Gradall have paid off!

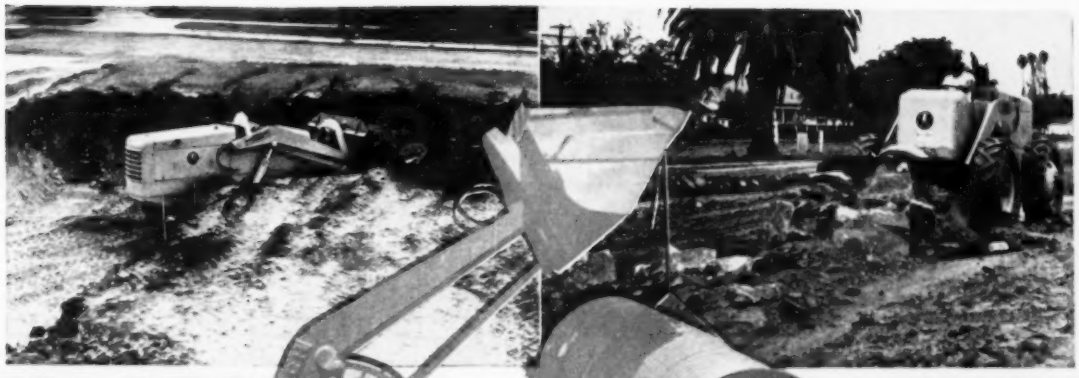
And now, the new Gradall carrier makes it possible to go more places, to work better than ever before. Its extra heavy rigid design—reinforced from end to end—with a balanced concentration of weight, gives stability for the toughest jobs—without any outriggers or other supports. Its shorter wheelbase gives the Gradall even greater maneuverability in tight spots.

But see the Gradall in action—find out about the wide variety of jobs you can handle better, faster, and at less cost with this one multi-purpose machine. Contact your nearest Gradall Distributor for a field demonstration.

Gradall
DIVISION OF WARNER & SWASEY *Cleveland*
PRECISION MACHINERY SINCE 1880

Gradall Distributors in over 75 principal cities in the United States and Canada

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY



CELLARS.. ..STREETS

..OR SEWERS

4-wheel-drive does a job

Amazing is the word for the variety of work that public works departments and contractors find for their 4-wheel-drive "PAYLOADERS." In fact, the range of uses of these versatile tractor-shovels is limited only by the ingenuity of their owners and operators.

Dig! Load! Backfill! Stockpile! Lift! Carry! Strip! Push! Pull! — all these job capabilities makes them one of the busiest machines on *any* project — and the most in demand. They drive quickly to work under their own power and they get around the job fast, too — on pavement and ground and over curbs and sidewalks without injuring them.

See one of these powerful, multi-purpose "PAYLOADERS" in action and you'll be amazed at what it can do, too. Your "PAYLOADER" Distributor is ready to give you complete facts. See him today, or write The Frank G. Hough Co., 768 Sunnyside Ave., Libertyville, Illinois.

WRITE

WRITE for full information on any of the "PAYLOADER" models: Four-Wheel-drive HM — 1 ½ yd. and HR — 1 yd.; Rear-wheel-drive Models HY — 1 ¼ yd., HF — ¾ yd., HE — ½ yd.; Front-wheel-drive Models HAH — ½ cu. yd., HA — 12 cu. ft.

PAYLOADER®

THE FRANK G. HOUGH CO. • Since 1929

Scrapers dig 25′-deep

Contractor reports 2 D Tournapulls save $149,000 over dragline method

When Arlington County, Virginia, announced a 7000′-long, 130,000-yd. sewer excavation project recently, one of the bidders was M. J. Bles Construction Co. of nearby McLean. Although "obviously a dragline job", according to other contractors, Mr. Bles decided to tackle the work with his 2 D Tournapulls. Confident the "D's" could greatly outproduce slower, more expensive equipment, Contractor Bles underbid the other firms by $149,000. Here's how he figured:

1. The 2 fast-hauling Tournapulls, with a lower hourly operating cost, could dig the 25′-deep trench for 96″ pipe cheaper and faster than a big dragline. (Job records later showed that it would have taken a 5-yd. dragline to produce as much as the "D's", and that costs would have been far higher.)

2. Excavated material, spread in thin layers by Tournapulls, would dry quicker than piles heaped by a dragline or trencher. Also, Tournapulls could easily reclaim and spread the dried muck, sand and gravel as backfill without aid of auxiliary equipment.

3. Because Tournapulls operate in the trench, and could dump at convenient locations some distance from cut, weight on sidewalls of trench would be minimized. Consequently, *no sheathing* of walls would be required to prevent cave-ins. Thus, a major cost factor would be eliminated . . . time and materials saved.

Depth of cut is now about 15′. Another 10′ of material will be removed before pipe is laid. As Tournapulls dig trench, pipe-laying crews go to work. Daily dirtmoving output was limited so excavating wouldn't get too far ahead of pipe-laying.

Winning the bid, Contractor Bles faced the acid test — could his Tournapulls really fulfill these 3 points? Here's what he found:

Moves 1,080 yds. per day

Push-loaded by a 101 h.p. tractor, Tournapulls consistently dug 5½ pay yds. of mixed muck, sand, and gravel in 30 to 45 seconds. As planned, rigs hauled out of the trench without assistance, spreading material in thin layers some distance from trench. No cave-ins occurred. No trimming or shoring was needed on the 1-to-1 side slopes. Entire 130,000-yd. project — including back-filling of the 96″ reinforced concrete pipe — was completed by the 2 "D's" in 120 days. Costs were well within the margin allowed. Profits were "even higher than expected."

Whenever *you* have dirt to move on *any* type job, it will pay you to check the output of the versatile 28 m.p.h. D Tournapull. It self-loads in most materials . . . yet has ample capacity (7 yds., 9 tons) for profitable production dirtmoving in fleets. Factual, owner-verified job reports on *your* type of work are yours for the asking. Just call your LeTourneau Distributor — no obligation.

LETOURNEAU LET EQUIPMENT

R. G. LeTOURNEAU, INC.

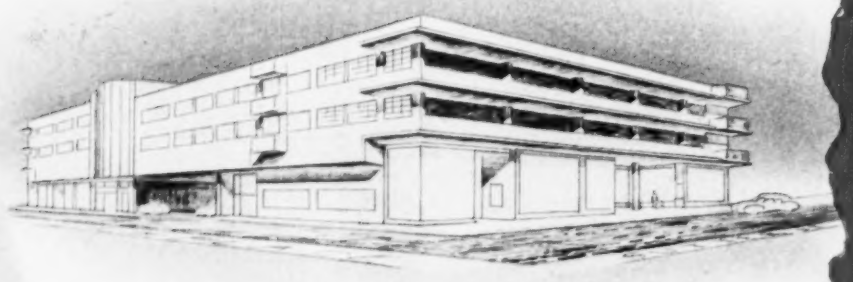
Peoria, Illinois

sewer trench

Tournapull heaps 5½ pay yards of muck and wet sand over a distance of 70 ft. Because material is spread in thin layers some distance from trench, no sheathing is needed to prevent cave-ins.

Tournapull—Trademark Reg. U. S. Pat. Off. DP-300-A

World's heaviest prestressed



11% savings over structural steel realized with design using Roebling Strand and Fittings

IN THE BARRETT-LICK GARAGE nearing completion in San Francisco, the plans call for a large, unobstructed space in the entrance area . . . and to achieve this, four columns from the upper stories terminate at the second floor and are carried by the heaviest prestressed concrete girders ever constructed. Prestressed concrete was chosen because it allowed adequate headroom without increasing the story height . . . and, incidentally, there was a $6,000 saving (more than 11%) over the cost estimate for an alternative structural steel design.

* * *

To meet the requirements of every prestressed concrete design, Roebling has developed a full line of products . . . Prestressed Concrete Wire and Strand for pre-tensioning . . . Strand and Fittings for post-tensioning.

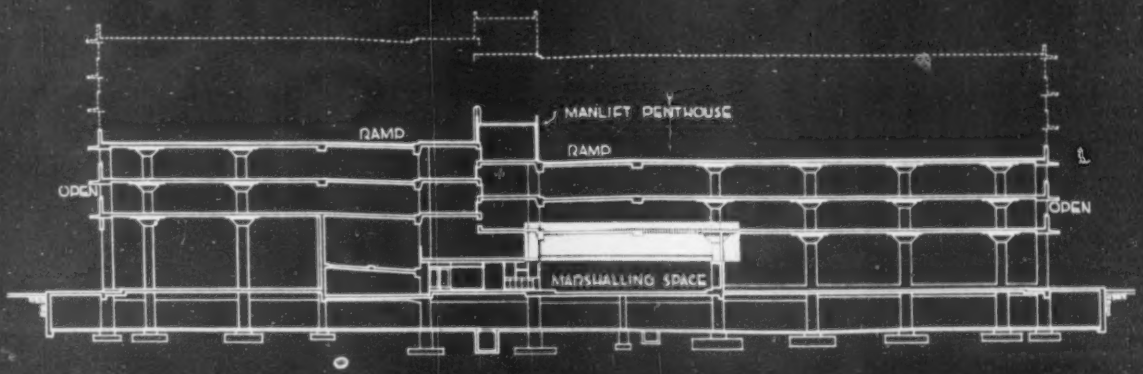
Roebling Wire and Strand for pre-tensioning are made of high tensile acid steel that results in products of high elastic characteristics. Special treating increases their bonding quality, too.

Roebling Strands for post-tensioning are fabricated from special hot galvanized acid wire, insuring extra strength and elastic properties. At recommended stresses, there is complete safety and no future relaxation of the steel. And Roebling Fittings develop the full strength of the strand without exceeding the yield point of any of their parts. They are attached at the plant and proof-loaded beyond recommended stresses.

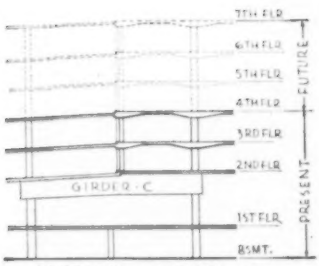
Prestressed Concrete is being more and more frequently adopted. Write for the facts and figures on Roebling Prestressing materials. Prestressed Concrete Dept., John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

A Subsidiary of The Colorado Fuel & Iron Corporation

girders for California garage



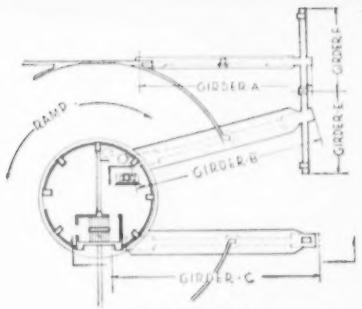
Ellison & King, Engineers • Barrett and Hilp, Contractors



SECTION AT GIRDER-C

Open, unobstructed entrance area is indicated directly below girder "C". Note that the design includes provision for three additional stories. This section shows haunched slabs used in actual construction.

Plan view of five prestressed concrete girders, showing their arrangement to meet the free area requirements of this ultra-modern garage.



GIRDER PLAN

ATLANTA, 934 ANN AVE. • BOSTON, 31 SLEEPER ST. • PITTSBURGH, ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 5253 FREDONIA AVE. • CLEVELAND, 14525 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 HARRISBURG BLVD. • LOS ANGELES, 5360 E. HARBOR ST. & 120 S. HEWITT ST. • NEW YORK, 19 RECTOR ST. • PORTLAND, TEXAS, 2920 E. 2ND ST. • PHILADELPHIA, 2310 LINE ST. • PITTSBURGH, 1300 CLARK BLDG. • ROCHESTER, 1 FLINT ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • ST. LOUIS, 3000 GRAND BLVD. • TULSA, 321 S. BOSTON AVE. • SANDBY SALES OFFICES, TRENTON 2, NEW JERSEY.

ROEBLING

THINK BIG...

WHEN YOU THINK CRUSHING AND SCREENING

THINK CEDARAPIDS...

ON EVERY JOB!

YOU aggregate producers are in a business where you have to think *big* in terms of the production and performance of your equipment. It just naturally leads to "thinking Cedarapids" for every job, because Cedarapids equipment is designed by construction men *for* construction men. Cedarapids engineers know the problems of the field because they're in the field finding out what it takes to keep ahead of changing conditions and methods, and meet the demands of constantly increasing production. They know *you* have to make money to stay in business . . . so they devote every effort toward designing types and sizes of equipment to meet your specific requirements at the low operating and maintenance costs that give you a definite advantage in competitive bidding as well as a comfortable profit.

Whether your next job is large or small, easy or difficult, it will pay you to get complete details about the Cedarapids equipment that helps you *think big.* Your Cedarapids distributor will gladly recommend the equipment that gets the best results for you, at the lowest cost . . . call him today for facts and figures.

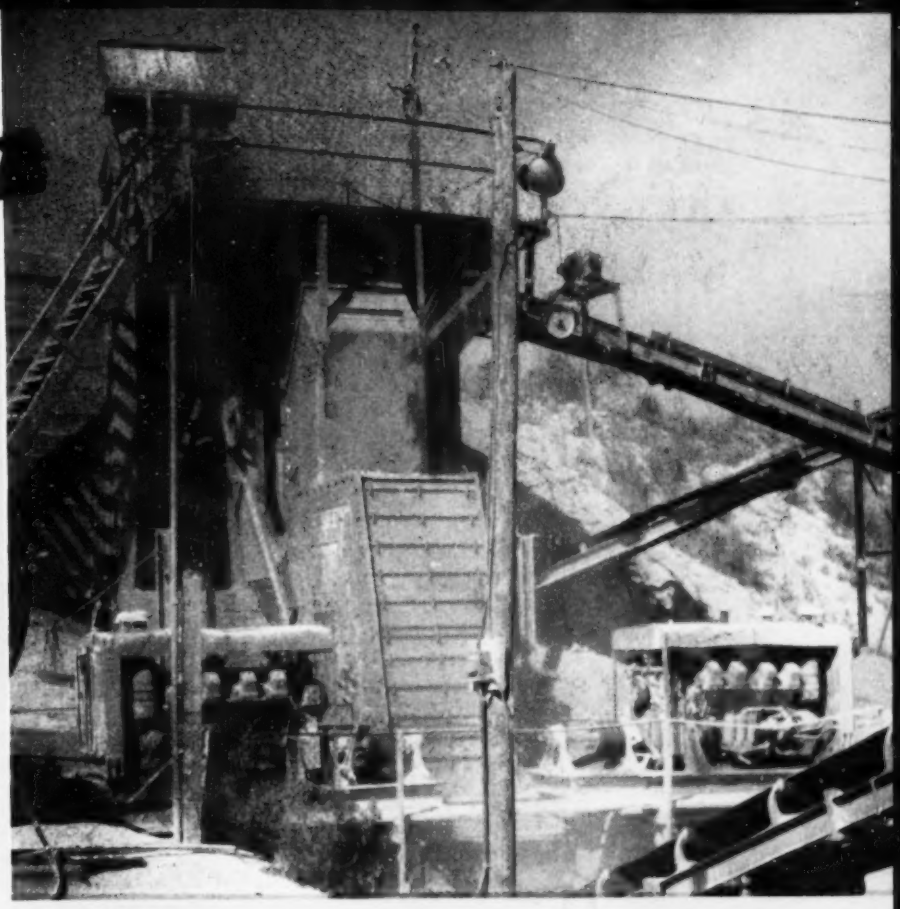
IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.

BIG PERFORMANCE

The Cedarapids "Rock-It" is a two-in-one unit that reduces 22" stone down to road stone or aglime in one operation. Capacity? Aurora Limestone Products, of Aurora, Iowa, averaged a consistent 100 tons per hour on a 50,000 ton road stone job. Their "Rock-It" has produced 100 tons per hour and also 120 tons per hour on different jobs to keep well ahead of schedule.

For crushing gravel, "Rock-It" Plants are now available with a 3018 Roll Crusher, in place of the 3033 or 2033 Hammermill, if desired. Your Cedarapids distributor can help you select the right crusher for your requirements.

BIG PRODUCTION



Cedarapids Double Impeller Impact Breakers can't be beat when it comes to hanging up tremendous daily tonnage records. Concrete Materials and Construction Company, using a Model 5050, *averaged* 600 tons per hour and hit a peak day's production record of 14,472 tons on their New Jersey Turnpike contract.

Using a Model 2020, Western Indiana Gravel Company worked an "impossible" pit and made money. Their problem was to produce gravel with 75% crushed particles in a pit containing 19% soft stone, several seams of conglomerate, with most of the gravel in the 1″ to 1½″ range, and very little plus 5″.

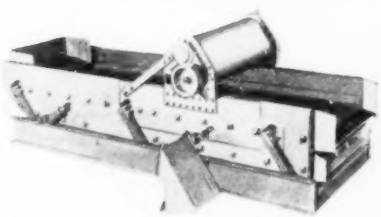
For big volume of cubical shaped aggregate, for extremely low-cost operation, and for profitable production under tough conditions, be sure you investigate the advantages of Double Impeller Impact Breakers. Ask about the new *portable* plant.

BIG PROFIT

Ask Reno Construction Company about Cedarapids Unitized Plants . . . they own six of them! They can depend on average hourly production of 150 tons from each plant . . . or they can combine the four basic units of the Unitized Plants in a number of different ways to meet specifications for every size products on other jobs.

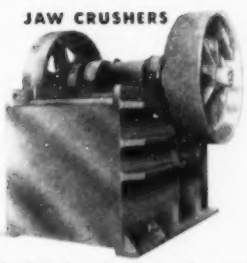
Talk to B. L. Anderson of Cedar Rapids, Iowa. One of his three Unitized Plants is turning out 4 products at a time at a 210 ton per hour clip. That's "thinking big" about production.

HORIZONTAL VIBRATING SCREENS



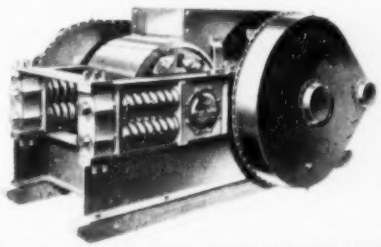
More efficient *horizontal* screening action, highly accurate gradation and large capacity combine to give you faster and more profitable screening at lower cost. Sizes range from 3′ x 8′ to 4′ x 14′ in double or triple deck styles.

JAW CRUSHERS



They're built to handle the toughest rock without pampering and produce up to 500 tons per hour at low cost! Available in 6″ x 12″ to 32″ x 40″ sizes in plain or roller bearing models. Ask about Twin Jaw Crushers for even higher capacities.

ROLL CRUSHERS



Here are the ideal units for producing a large volume of smaller sized aggregates. Seven sizes (from 16″ x 16″ to 40″ x 24″) available with two smooth or two corrugated roll shells, or one of each, depending on the product desired.

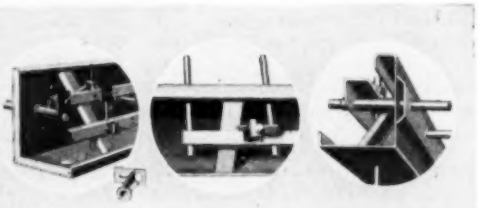
BUSY CONTRACTORS WILL LIKE THIS FAST TURNOVER IN ROAD-AIRPORT FORMS . .

Heltzel Combines Two Standard Forms To Simplify Handling • Reduce Inventory

If your business calls for multiple form sizes you'll want to know about the HELTZEL DUAL-DUTY FORM. Here are two individual form heights combined into a single form section. Simply turn it on its side and you have the second height. Latest form designs lend themselves to this arrangement naturally—providing lower initial purchasing costs and greatly reducing inventory problems.

The forming of the second rail on each form section greatly strengthens the section—assuring longer life. What's more, every DUAL-DUTY carries all the normal Heltzel features so popular with contractors today: corner-to-corner bracing—formed stake pockets; single, sure-bind wedging that eliminates counter thrust of a second wedge—and re-rolled rail stakes, heat-hardened and sharpened to penetrate toughest rock conditions, assuring firm grip and perfect form alignment.

Before you buy be sure to look over the one complete line of standard and special sidewalk, road, curbing and airport forms designed and built by the HELTZEL STEEL FORM AND IRON CO., WARREN, OHIO. Send for additional literature. Representatives throughout the world.



Three integral form devices, exclusive with Heltzel, can be readily adapted to Dual Duty Form for jobs calling for doweling. Field tested, these methods assure accurate alignment, fast handling and easy stripping. Others engineered upon request.

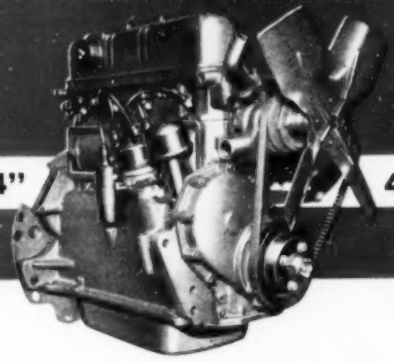
Naturally It's A

THE HELTZEL STEEL FORM AND IRON COMPANY — Heltzel — BUILDS IT BETTER — WARREN, OHIO

ROAD JOINT MACHINE COMPANY — Flex-Plane — MECHANIZED CONSTRUCTION EQUIPMENT — WARREN, OHIO

FORD'S *Heavy Duty* INDUSTRIAL ENGINES

meet America's most popular power needs!



FORD "134" 4-CYL., O.H.V.

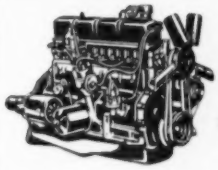
Ford's Overhead Valve Industrial Engines have been thoroughly tested and highly accepted for industrial applications in the field, and now a 4-cylinder power plant of the same type is being offered. This Ford "134" cu. inch engine incorporates notable advancements for still greater performance and operating economy. **Bore:** 3.4375 in. **Stroke:** 3.6 in. **Rating** (dyn.): 45 b.h.p. @ 2400 rpm.

Manufacturers of powered equipment throughout the U.S.A. are constantly in search of economical power to speed productive activities and increase profits.

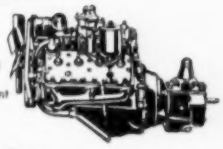
Because of its efficient mass production methods and nationwide service facilities, the Ford Motor Company is a popular source of economical, low-cost Industrial Power. *Here* on this page are the engines which Ford has designed and built to its famous Hi-Precision standards *especially* for the needs of Industry.

You'll find these Heavy Duty Engines at work today powering equipment in our vast oil fields, on our farms and in factories, around logging camps, sawmills, road building and huge construction projects.

If you're interested in any of the engine series shown, one of Ford's Staff of Sales Engineers will be glad to discuss your power problem and perhaps help you solve it advantageously.

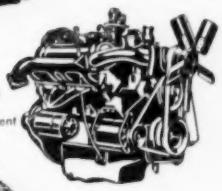


FORD "215" 6 cyl.
Industrial Engine
215 cu. in. displacement

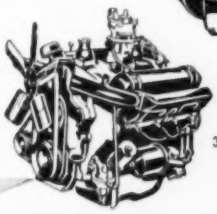


FORD "239" V-8
Industrial Engine
239 cu. in. displacement

FORD "254" 6 cyl.
Industrial Engine
254 cu. in. displacement

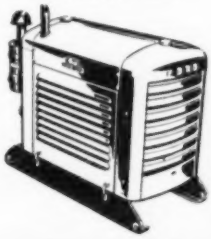


FORD "279" V-8
Industrial Engine
279 cu. in. displacement

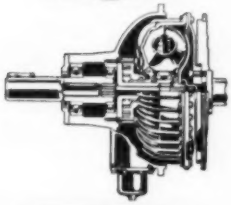


FORD "317" V-8
Industrial Engine
317 cu. in. displacement

TYPICAL FORD CLOSED TYPE POWER UNIT



FORD
MULTA TORQUE
CONVERTER



Ford
INDUSTRIAL ENGINES
AND POWER UNITS

YOUR JOB IS WELL POWERED
WHEN IT'S FORD POWERED

CLIP AND MAIL THIS HANDY COUPON TODAY!

INDUSTRIAL ENGINE DEPARTMENT
FORD MOTOR COMPANY, 15050 Woodward Ave., Highland Park 3, Michigan

WE ARE INTERESTED IN INDUSTRIAL POWER FOR:

_____
(state your application)

Please send us latest literature on Ford Industrial Engines checked below:

☐ "134" 4-Cyl. ☐ "215" 6-Cyl. ☐ "239" V-8 ☐ "254" 6-Cyl.
☐ "279" V-8 ☐ "317" V-8 ☐ "MULTA-TORQUE" Converter

FIRM NAME _____ YOUR NAME _____
(Please Print)

STREET ADDRESS _____

CITY _____ ZONE _____ STATE _____

C

. . . *and*

HERE'S THE COMPRESSOR THAT CARRIED THE BRUNT OF THE DRILLING JOB!

QUOTE:

"The Schramm 315 c.f.m. Diesel Engine Driven Compressor illustrated is being used by the Racquette River Construction Corporation, Potsdam, N. Y., on the Niagara Mohawk Power Corporation job at Carry Falls.

For the past year, this compressor has carried the brunt of our drilling for rock excavation. pressure grout holes, and rock rip rap quarrying. We ordinarily use four individual hammers drilling two feet to six feet holes and occasionally have out as much as eight hundred feet of ¾" hose, in the aggregate. For the grout holes and rip rap, we use the machine to operate two 50 pound wagon-mounted hammers drilling twenty feet holes.

When not employed as mentioned above, we use the compressor for such other jobs as cleaning concrete surfaces with air, pumping water (with an air mop) and pressure grouting."

Cordially yours,
RACQUETTE RIVER CONSTRUCTION CORP.

Frederick Rexford,
Superintendent

Write today for Bulletin 5101A

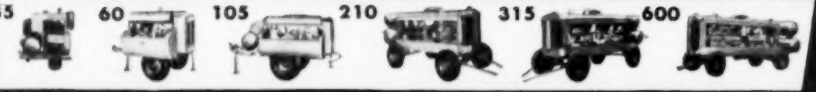
SCHRAMM, INC.

The Compressor People

WEST CHESTER • PENNSYLVANIA

SCHRAMM AIR COMPRESSORS

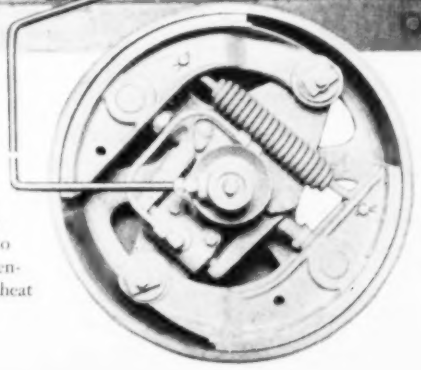
A SIZE AND MODEL FOR EVERY AIR NEED



Before you buy:

COMPARE CLUTCHES!

Speed-o-Matic Clutch shoes are actuated by perfectly controlled variable hydraulic pressure transmitted directly *into* the clutch. There are no mechanical linkages, no boosters. Clutch is self-compensating, automatically adjusts for heat and normal lining wear.



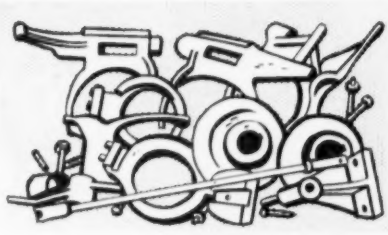
Link-Belt Speeder's hydraulic clutch needs fewer adjustments eliminates jerk, jump or lag

THE Speed-o-Matic power-driven hydraulic controls and clutch eliminate mechanical clutch linkage. This results in unequalled ease and speed of operation . . . smooth, instantly responsive action. You get longer lining life, freedom from frequent attention and far less chance for clutch failure.

For details on the Speed-o-Matic clutch . . . information on the Link-Belt Speeder line of crawler, wheel or truck mounted shovel-cranes, write:

12,103

LINK-BELT SPEEDER CORPORATION
Cedar Rapids, Iowa



Eliminates up to 150 parts — there are no worn bushings, pins, links or clutch toggles to put you "down."

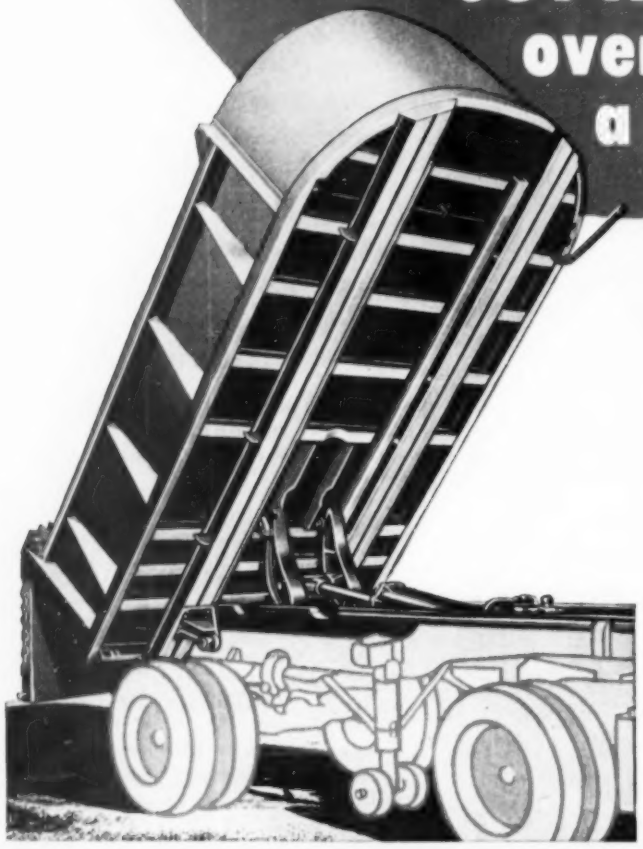
LINK-BELT SPEEDER
CORPORATION
BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES

FACTORY-TRAINED DISTRIBUTOR SALES AND SERVICE SPECIALISTS ...EVERYWHERE

Can You Name It?

The men on this "air conditioned" model 1910 truck really had an out-in-front riding position. This old COE job had a 4-ton capacity and its brand name is one that's famous among present-day heavy-duty trucks.

PERFECTION BODIES & HOISTS have been OUT IN FRONT for over a third of a Century



During the past 35 years the motor truck industry has multiplied itself approximately 130 times. And keeping pace with this tremendous growth, PERFECTION has been constantly out in front as an independent manufacturer in the truck body field. Likewise, PERFECTION Bodies and Hoists are an out-in-front choice of both truck dealers and users because they are —

DESIGNED — to permit quick, easy installation on your trucks.
— with adequate safety factors.
— to deliver the *best performance on the job.*

CONSTRUCTED — of high quality materials.
— by skilled workmen.
— to give the *longest service on the job.*

Photo shows a PERFECTION No. 354 Heavy-Duty Dump Body of 15-yd. capacity installed on a semi-trailer with a PERFECTION Iso-Draulic Roll-A-Lift.

For literature write Dept. R-33

PERFECTION TRUCK BODIES and HYDRAULIC HOISTS

FOR ANY TRUCK
STANDARD or SPECIAL UNITS IN ALL SIZES • FOR ANY USE

Engineered, Manufactured, and Guaranteed by
THE PERFECTION STEEL BODY COMPANY . . . . . Galion, Ohio, U. S. A.

YOU CAN'T DIG DIRT

with a Dragline unless you can travel!

There are a lot of people who forget that output depends on a lot of other things besides the digging functions. Take Dragline work. That ditch will go for miles back in the country before it's done and it isn't going to be "dance floor" travel either. These rigs will be in a lot of difficult places before the trailer picks them up for another job. It's those tough places that cost time and money.

When you have Northwest steering on your larger machines there is no worry about the difficult spots. Positive traction on both crawlers while turning as well as when going straight ahead, reduces the need for mats and takes you in and out of the places that give other equipment trouble. Northwest Crawlers with their self-cleaning action have been proved in the miles of travel characteristic of Dragline and Pullshovel work. They require little maintenance — they are trouble-free and they take you *there — and back.*

Look at the tread trail of a Northwest Crawler—no jerking—no digging in—no terrific overload of strain caused by shoving the machine around with one live crawler. Northwest Positive Traction saves money by getting you through the difficult places easier and faster.

NORTHWEST ENGINEERING COMPANY
1504 Field Bldg., 135 South LaSalle Street, Chicago 3, Illinois

It's Another

NORTHWEST

CUT TIME between jobs...

get extra production from slow machines with MILLER Tilt-Top!

MILLER "B" 10 ton shown above loading D-4 tractor

You'll find MILLER Tilt-Top the handiest trailer for cutting between job travel time on your slow machines. Heavy units are loaded by one man in less than two minutes. Operator drives unit on platform —it tilts, locks . . . and he's on his way with no lost motion.

MILLER Tilt-Top saves even more time than other more cumbersome trailers with its better maneuverability, and easier backing. Best of all, MILLER'S exclusive mass production of Tilt-Top trailers cuts original cost for you. Get this extra help . . . extra production now — see your MILLER dealer today!

handier
easy-to-back
priced right

Model "B" 10 ton $1175
Optional equipment (priced extra) 16' long platform (8'x14' standard), hydraulic tilt control, 2 speed hand winch and electric brakes.

MILLER Tilt-Top TRAILERS *research engineers*

Trade mark reg.

Dept. C-3, 458 So. 92nd Street, Milwaukee 14, Wis.

IF IT'S WIPERS YOU NEED TRY SOME OF THESE

"WIPEX BRAND" QUALITY WIPING CLOTHS

DOMESTIC WIPERS

No. 11 **ALL WHITES**—Light-weight, general-purpose wiper; washed and sterilized; minimum size 12 by 12 and over.

No. 12 **NEAR WHITES**—Pastel colors; light-weight, general-purpose wiper; washed and sterilized; minimum size 12 by 12 and over.

No. 13 **LIGHT-WEIGHT COLORED**—The same as Near White except darker material.

No. 14 **MEDIUM-WEIGHT COLORED**—Denim-weight material; cotton sweaters; light-weight pants, etc.; free of heavy seams, pockets, waist bands and other objectionable material; sterilized.

No. 17 **DOMESTIC WHITE KNITS**—Light-weight underwear; washed, bleached and sterilized; very soft and absorbent, general-purpose wiper.

No. 19 **RECLAIMED TOWELS**—Turkish and huck; washed, bleached and sterilized; wiper size; durable.

No. 22 **WHITE COTTON WASTE**—No. 1 quality; free of rayon threads and lint.

No. 23 **WHITE COTTON WASTE**—No. 2 quality; threads slightly coarser in texture than No. 1 quality.

No. 24 **COLORED WASTE**—Same specifications as White Cotton Waste, except colored.

ALSO ALL TYPES MILL ENDS

No. 1 **JUNIOR MILL**—New, washed, bleached and sterilized sheeting from cotton mills; no seams; no holes; free of lint; size from ¾ to ¾ yard.

No. 5 **MISPRINTS**—New, washed and sterilized colored sheeting; misprinted cloth from the mill; free of lint.

We specialize in producing high quality mill ends. The kinds listed above are produced solely in our own plant and are standard numbers. The quality will not vary more than 2 per cent.

Samples gladly furnished on request. Freight prepaid on shipments of 250 pounds or more.

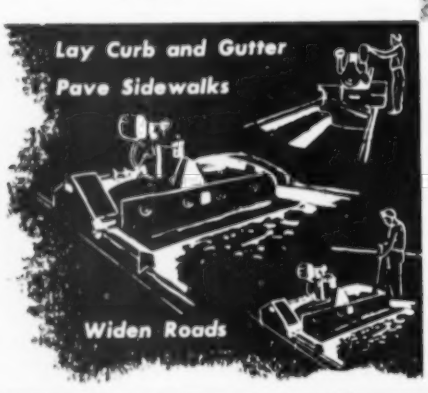
We guarantee all our wipers to be thoroughly washed and sterilized in our own plant in accordance with all state and city health laws.

Institute of Laundering MEMBER

INDUSTRIAL WIPING CLOTH COMPANY
P. O. Box 1087
Asheville, North Carolina

You can't afford to be without a Dotmar Paver

IF YOU:



It's Actually 3 Machines In 1!

Contractors everywhere are boosting production, saving time, cutting costs, with Dotmar Curb and Gutter Pavers. Paves 5 to 10 lineal ft. per min. Lays any shape curb and gutter, and sidewalks up to 60" wide, or integral, curb, gutter and sidewalk simultaneously. Tamps concrete ahead of screed. Pays for itself in first mile of curb and gutter paved. No face forms to set in curb work. Self-powered—as few as 3 men can operate. Send for Bulletin 52.

Dotmar INDUSTRIES Inc.

501 HANSELMAN BLDG. KALAMAZOO, MICH.

The VENETIAN

Miami End of Venetian Causeway

ATTENTION A. G. C. A.!

All roads lead to The VENETIAN for the Associated General Contractors of America Convention March 23-28 in Miami. Convenient to Auditorium, Ample Free Parking, handsomely appointed rooms—excellent service—authentic French-Italian cuisine in Air Conditioned Baroque Dining Room and Cocktail Lounge.

OPEN YEAR 'ROUND

Special Convention Rates

Write direct to Hotel for Reservations

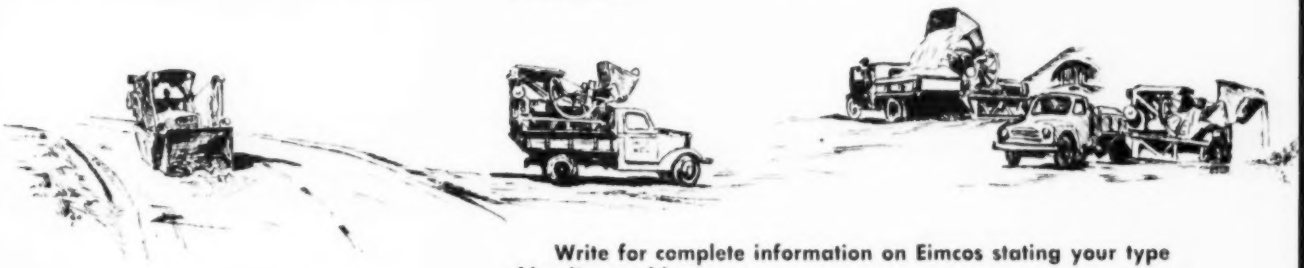
Saul B. Yuran, General Manager

Eimco's Work Faster! Keep Job Costs Lower

Contractors, on all types of jobs, know that Eimco's will consistently save them money as an all around tool on general maintenance jobs, special repair jobs or new construction.

Take a job of loading sand or gravel. Eimco's will load from 4 to 6 yards per minute, and keep it up. This is a loading speed that invites comparison with heavier, more expensive equipment.

Eimco's are also good at digging unbroken ground for new roads, soil-silt deposits in riverbeds, taking up highway curb or shoulders, loading snow, clearing winter sluff, digging out frost blisters or digging ditches culverts or the toughest kind of rock loading.



Write for complete information on Eimcos stating your type of loading problem.

You Can't beat an Eimco

EIMCO

4437

THE EIMCO CORPORATION

The World's Largest Manufacturers of Underground Rock Loading Machines

EXECUTIVE OFFICES AND FACTORIES - SALT LAKE CITY 10, UTAH, U. S. A.

BRANCH SALES AND SERVICE OFFICES:

NEW YORK 51-52 SOUTH STREET • CHICAGO 2319 SOUTH WALLACE STREET
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EL PASO, TEXAS, MILLS BUILDING • BERKELEY, CALIF. 632 CEDAR STREET
KELLOGG, IDAHO, 307 DIVISION ST. • LONDON W. 1, ENGLAND, 190 PICCADILLY

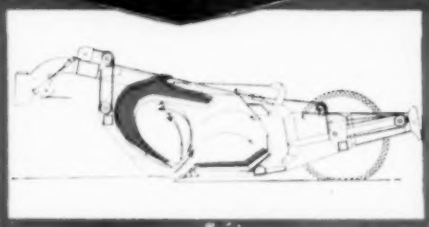
• IN FRANCE: SOCIETE EIMCO, PARIS, FRANCE
IN ENGLAND: EIMCO (GREAT BRITAIN) LTD., LEEDS 12, ENGLAND
IN ITALY: EIMCO ITALIA, S.P.A., MILAN, ITALY

THE RIGHT POWER... PROPERLY APPLIED

MEANS FASTER, LOWER-COST CYCLES

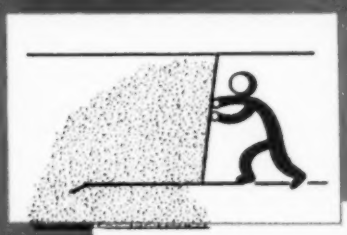
DESIGNED FOR FASTER LOADING

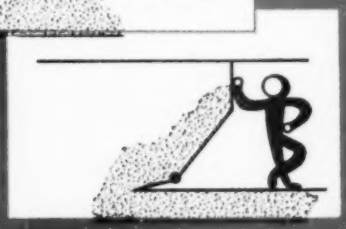
Job time studies prove that Heiliners do a faster, better job of loading than any other units of the same size. It's the skillful, balanced design that does the trick. The bowl is designed to "boil" up a fountain of dirt *in the center of the bowl,* quickly heaping both back and front with evenly balanced pay load. The bowl and the cutting edge do most of the work to save horsepower. With Heil's planetary drive, the final reduction is in the drive wheels, where it does the most good. There's less torque in the axle and no "chatter" on the drive wheels. It provides a smooth application of power from engine to tire for the ultimate utilization of available horsepower. Heiliner's extra large rim size is another power-saving design feature. It permits greater ground contact area for better traction and flotation in soft going.



POSITIVE "TILTING FLOOR" EJECTION

Heiliners have the advantage of the simplest, most efficient type of positive forced ejection known. The diagrams at the right show you why "Tilting Floor" ejection saves horsepower. With the ordinary square bowl, not only pressure against the sides must be overcome, but more horsepower is needed to overcome the tremendous pressure of tons of heavy dirt on the bottom of the bowl. With the Heiliner, the floor simply tilts up to a 75° angle by means of a positive ram action. After the initial static friction is overcome, the only pressure the power control unit has to overcome is that exerted on the sides of the bowl.





LOWER FIRST COST

When you buy Heiliners, you don't buy power that's wasted. There's plenty of power in the big Diesel engine to meet every job condition efficiently, with ample reserves to handle the toughest job. Heiliners "right power, properly applied" reduces first cost as well as operating and maintenance costs.

LOWER OPERATING COSTS

Every Heiliner feature is designed to cut operating costs. Lower power requirements reduce fuel consumption. Big pay load capacity lets you move more dirt per trip. High haul speeds mean an extra trip or two an hour for extra profit. "Passenger car" steering with Heil's exclusive, patented Hydro-Steer, plus big, safe 4-wheel brakes assure easier handling and give the operator confidence to utilize the full power of the machine at all times. Low maintenance requirements and easy servicing reduce downtime.

IT ADDS UP TO LOWER COST PER YARD OF DIRT MOVED

●

See your
HEIL DISTRIBUTOR
for proof

12 and 18-yd. Heiliner Scrapers — 20-yd. Heiliner Bottom Dump Wagon — 6, 9, 11 and 14-yd. Tractor Drawn Scrapers — Cable Power Control Units

Another cost-cutting secret of

HEILINER

PERFORMANCE

EXACTLY the right power correctly applied at the point of action! That's Heiliner's solution for the problem of moving more yards of dirt at less cost per yard.

When you buy an earthmover, you want a balanced rig that *utilizes* horsepower . . . instead of wasting it. Spinning the drive wheels in the pit doesn't put dirt in the bowl! The Heiliner's *properly applied* power, plus efficient, well-balanced design, *saves* horsepower and cuts costs on every phase of the cycle . . . it heap-loads faster in a shorter digging distance, travels at speeds up to 25 mph fully loaded, spreads faster and easier . . . all with unusually low horsepower requirements.

Your Heil distributor can give you the complete story about "the right power, properly applied" and show you how Heiliners will cut costs on *your* job. Stop in or phone him today.

Fast, easy spreading with Heiliner's positive, forced "Tilting Floor" ejection cuts earthmoving costs on a job in Minnesota.

R-3

THE HEIL CO.

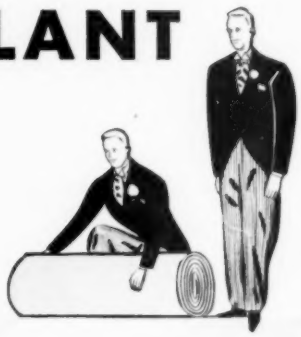
3004 WEST MONTANA STREET • MILWAUKEE 1, WISCONSIN

DEPARTMENT 423

FACTORIES: MILWAUKEE, WIS., HILLSIDE, N. J.

Sales Offices: New York, Hillside, Washington, D. C., Atlanta, Cleveland, Milwaukee, Detroit, Chicago, Kansas City, Denver, Dallas, Los Angeles, Seattle; Rio de Janeiro, Brazil.

—lay it down like the carpet at a wedding with a BUTLER Roadbuilders PLANT



Trucks never wait at a BUTLER Roadbuilders Plant. Each driver's turn is *right now* — the instant he rolls up for a batch.

And that means costly pavers and the men never wait either; if anything, trucks are ahead of the best efforts of a well trained dual drum crew.

And BUTLER batching is not only fast, it's accurate to a split-pound.

That is why inspectors like to find a BUTLER PLANT on jobs they must watch.

Contractors prefer BUTLER, too. They know that costs will stay safely on the sunny side and BUTLER "ahead-of-schedule" production will more than compensate for the rainy days.

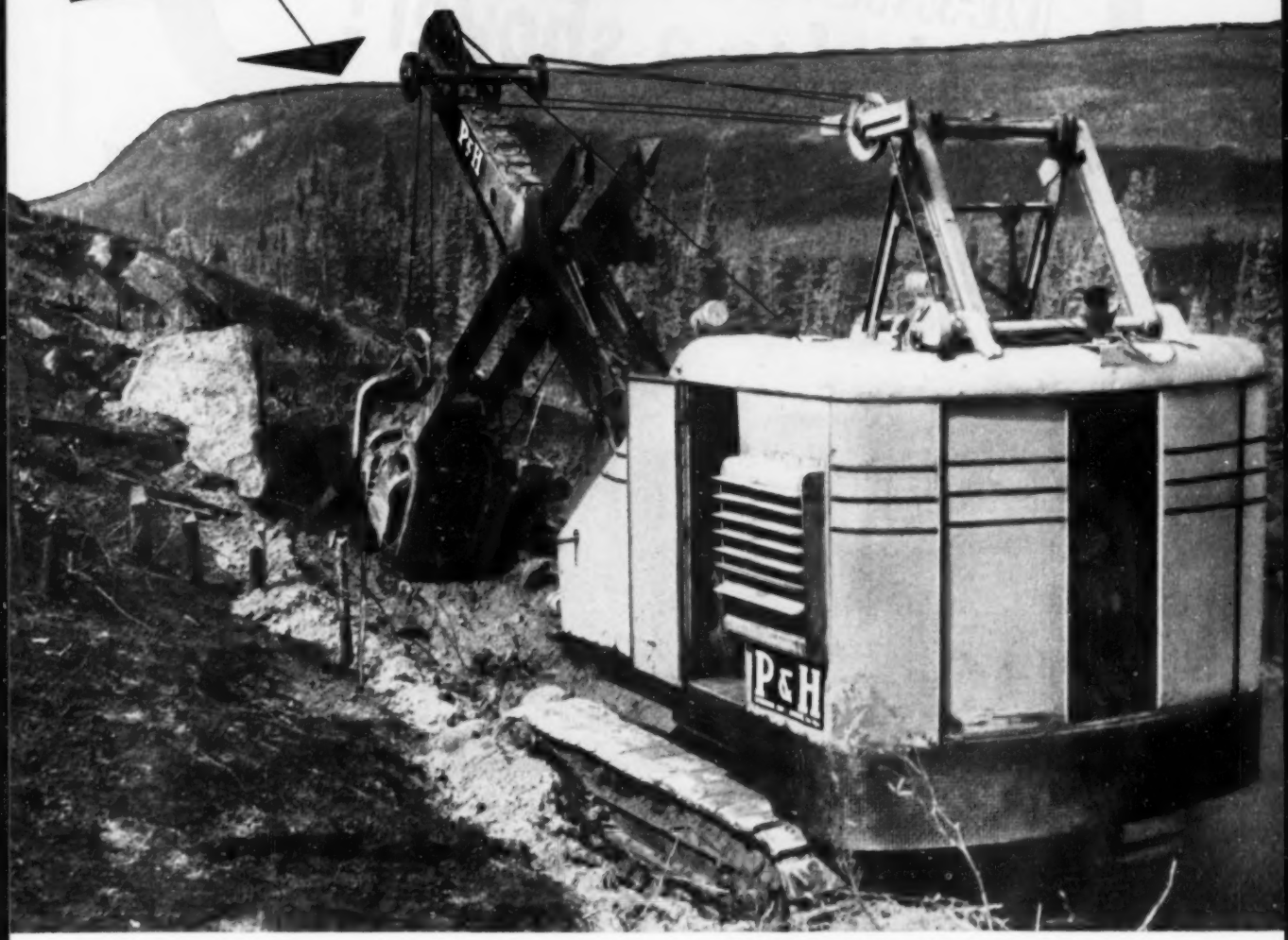
So, lay that slab down like the white carpet at a church wedding. And smile at the profit a BUTLER Roadbuilder Plant will bring you when the job is finished.

BUTLER BIN has a special Bulletin on BUTLER Roadbuilders Plants. It's yours without charge on request. Just write for Bulletin 205.

BUTLER BIN COMPANY
959 BLACKSTONE AVE.
WAUKESHA, WISCONSIN

P&H STABILITY

makes a big difference!



When you need that extra push, you'll be glad your machine is a P&H. With its low center of gravity, better balance and all-welded construction of rolled alloy steels — you can exert more power at the tooth point with less strain or danger of tipping. That's what gives you the *added work capacity*. You can prove this for yourself as many others have done. Ask to see a P&H on a job near you. Watch it work!

And while you're there, watch the mobility on true tractor-type crawlers. Note how smooth hydraulic control enables the operator to "feel" the load at all times. It's easier on both man and machine. And far easier on maintenance. You'll sell yourself on P&H in a hurry.

P&H POWER SHOVEL AND CRANE DIVISION

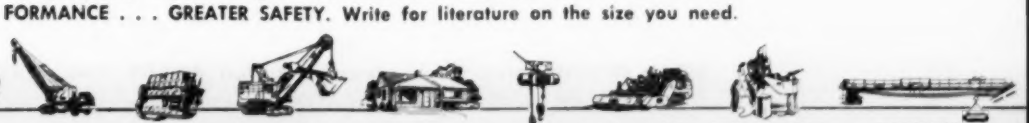
HARNISCHFEGER CORPORATION

MILWAUKEE 46, WISCONSIN

See your P&H Dealer!

Look to P&H for the most modern features in Power Shovel and Truck Crane construction. There's all-welded design, live roller circle, triple-safe boom hoist, hydraulic control, plus a low center of gravity that provides a higher ratio of lifting capacity to gross weight. This means more WORKABILITY . . . BETTER PERFORMANCE . . . GREATER SAFETY. Write for literature on the size you need.

the P&H *Line*



MARION Rock bodies stand up Under a shovel!

It takes a tough body to stand daily shovel loading. That's why more operators are putting Marion's into service. On-the-job experience has shown that Marion bodies are built to withstand the severe beating and hard knocks of heavy off-the-road haulage service.

Marion engineers have combined the finest materials available with modern advanced design... to produce the most efficient, trouble-free heavy dumping units on the market. And Marion's built-in durability means consistent performance . . . longer life, and lower upkeep.

A Marion body and hoist makes a good truck — *better!* Your nearby Marion Distributor can give you all the facts—or write direct today.

"Designed on the Job"

MARION BODIES AND HOISTS

MARION METAL PRODUCTS CO.
Marion, Ohio, U. S. A.

A complete line of standard and special Hydraulic Hoists and Dump Bodies for heavy-duty service

"There's only ONE reason!"

IT'S JUST THAT SIMPLE. There's only one reason in the world why 2 out of 3 wire rope users in the excavating and construction field prefer Roebling wire rope . . . *it costs a lot less on the job than any other.*

For maximum wire rope efficiency and economy, call your nearest Roebling office for a Field Man. He'll recommend the best ropes for your machines.

ROEBLING CF&I

A subsidiary of The Colorado Fuel and Iron Corporation

JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J. BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5535 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13235 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1930 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 331 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

DOWFLAKE SAVES UP TO $300 PER MILE ON GRAVEL ROAD MAINTENANCE COSTS

Actual experiences show that DOWFLAKE treatment reduces gravel loss 80% and grading costs 85%

That's right! You can actually save up to $300 per mile per year by treating your gravel roads with Dowflake® (Dow calcium chloride 77-80%). By stabilizing roads with Dowflake, gravel loss can be cut 80% and grading costs can be reduced 85%. These figures have been proved by experience under actual conditions on typical roads.

The annual surface loss on untreated gravel roads ranges from one half an inch for local roads to three quarters of an inch for primary roads. On Dowflake treated roads, the saving of 80% means a saving of almost five eighths of an inch or over 160 cubic yards of gravel per mile.

The 85% saving on grading costs on Dowflake-treated roads is important from the standpoint of available manpower and equipment . . . both can be used more economically, which means dollars saved.

In your locality you may realize even greater economies with Dowflake, for the amount of road travel and costs of material and labor vary. In addition to road stabilization, Dowflake is being used on gravel roads throughout the country to keep down dust and to decrease the damage of spring breakups by reducing the effect of frost.

Ask about Peladow®, Dow's new high-test, pellet-form calcium chloride (94-97%) also engineered for highway use. In addition to 100 lb. bags, Peladow can be shipped bulk in closed hopper cars.

Contact Dow now and get the complete story on how Dowflake and Peladow can make *better—more economical—and safer roads.* THE DOW CHEMICAL COMPANY, Midland, Michigan.

you can depend on DOW CHEMICALS DOW

NO BUGS! NO ORPHAN MODELS!
What's "new" in other compressors, Jaeger has built for 5 years

If you plan to buy a portable compressor, you now have 3 kinds to choose from:

1: Machines that still cling to the 20-year old ratings of 60, 105, 160, 210 and 315 ft., and are too small to run today's air tools efficiently.

2: New models offering, for the first time, the higher ratings which today's tools require.

3: Jaeger "Air Plus" Compressors which originated these higher ratings 5 years ago and guarantee them with the proved performance of more than 30,000 "new standard" compressors in the field.

No other compressors, new or old, yet give you Jaeger's features:

Balanced W-type 2-stage compressor in every size from 75 to 600 ft.

75% to 100% larger valves than in older type machines.

Positive lubrication by gear driven oil pump, standard in all models.

Bigger intercoolers and air receivers. Relief valve for automatic drainage standard in all models.

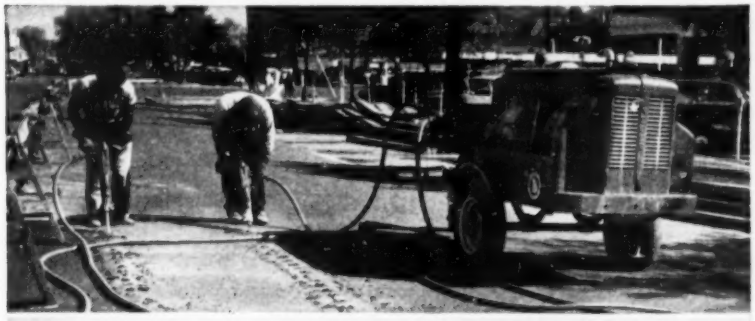
Bigger engines operated at conservative speeds, and bigger multiplate clutches than on any other compressors.

"Fuel Miser" control standard on all models where automatic regulation of engine speed means worthwhile fuel savings.

Lowest cost compressed air you can buy:

Prices of Jaeger compressors are, in every case, lower than those being asked for old standard compressors. Your cost per cu. ft. of air is many dollars lower because a Jaeger delivers 15% to 25% more air. And with this added air holding 90 to 100 lbs. pressure at the tools, instead of mere 70 lbs., you get 30% to 40% more production *with the same men and tools.*

Ask your Jaeger distributor to prove this. Or send for Catalog JC-1, which gives full data on compressors, tools and their air requirements — facts not published in any other catalog.



Jaeger Model 75 — the first compressor to operate one heavy pavement breaker efficiently.

Jaeger Model 125 — (illustrated) the first compressor to operate 2 heavy pavement breakers efficiently.

Jaeger Model 185 — the first compressor to operate 3 heavy pavement breakers efficiently.

Jaeger Model 250 — the first compressor to operate a 3½" wagon drill or 2 heavy rock drills efficiently.

Jaeger Model 365 — (illustrated) the first compressor to operate a 15/32" nozzle sand blaster efficiently. Can also run a 4" wagon drill at full pressure with air to spare for plug-hole drilling.

Jaeger Model 600 — the first compressor to operate two 4" wagon drills or a 9B-3 heavy pile hammer efficiently. (Introduced in 1946, when all others built 500 ft. compressors.)

THE JAEGER MACHINE COMPANY

223 Dublin Avenue, Columbus 16, Ohio

PUMPS • CONCRETE MIXERS • TRUCK MIXERS • AGGREGATE SPREADERS • CONCRETE SPREADERS and FINISHERS

9% MORE OUTPUT

By saving 15 to 25 seconds every time it dumps, Koehring heavy-duty Dumptor earns an important increase in yards hauled per hour. For example: At 16 trips an hour on a typical 1000-foot one way haul, saving an average of 20 seconds every cycle gives you 5.3 minutes more productive haul-time . . . and adds 9% to hourly yardage output.

There is no waiting for slow-acting body hoists. With Koehring gravity dump it takes just one second to dump a full 6-yard load. Operator trips the body release lever, and gravity instantly tilts the scoop-shaped body 70° . . . one second later the body is empty, and Dumptor is on its way back for another load.

You get this same one-second dumping even in sub-zero weather because gravity dump never balks . . . never wears out. And you don't lose time or spend money on expensive hoist maintenance or costly replacement parts because Koehring Dumptors have no body hoists.

One-second gravity dump and no body hoist maintenance are typical of Koehring Dumptor's basic principle . . . to reduce all non-productive time and costs to the absolute minimum . . . and to increase work-time for more yards per hour, more profit per yard *for you.*

Dumptor has many other cost-cutting advantages worth checking . . . it will pay you to get all the details from your Koehring distributor, or write to us for 28-page Dumptor catalog.

KOEHRING COMPANY • Milwaukee 16, Wis.

Subsidiaries: KWIK-MIX • PARSONS • JOHNSON

FAST CLEANING scoop-shaped body has all-welded sides, ends and bottom heavily reinforced with 4" channel ribs for toughest rock service. Triple strength is built into steel-oak-steel bottom: . . . free-swinging kick-out pan adds another steel layer.

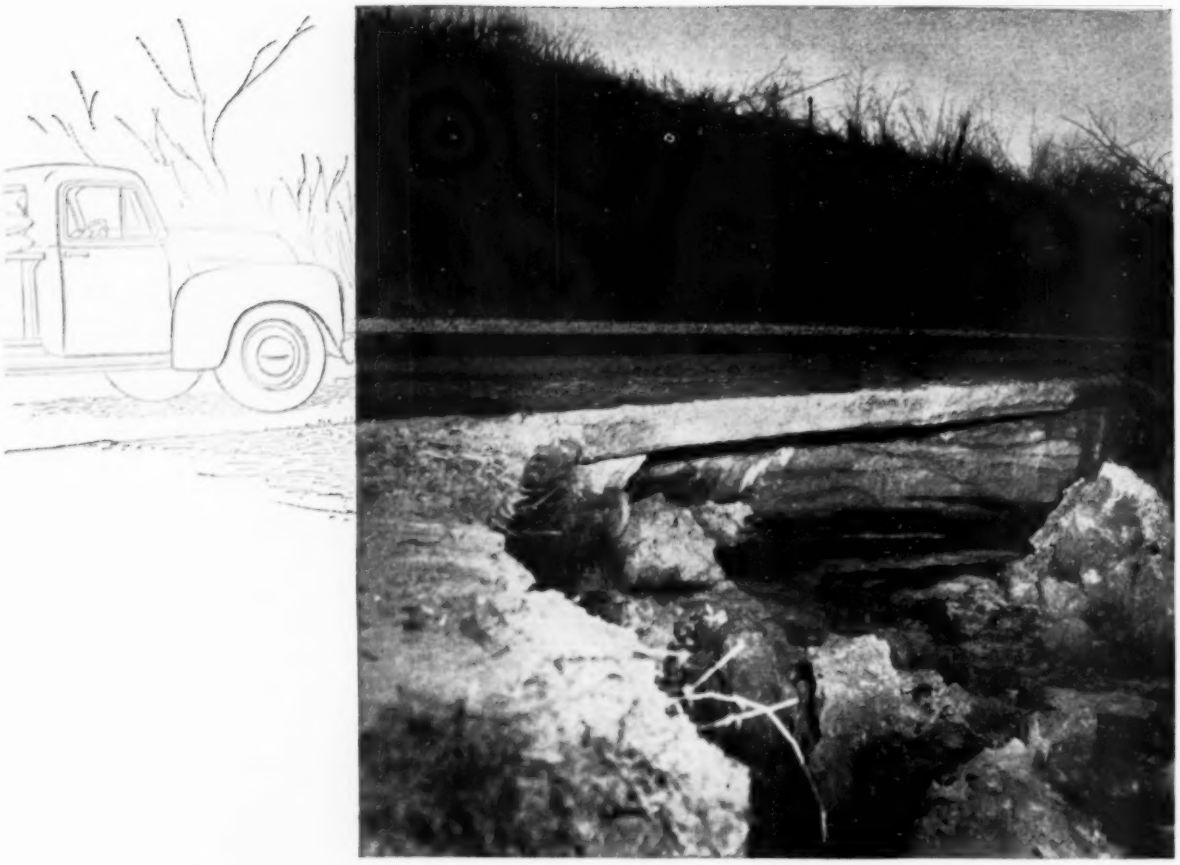
NO-TURN SHUTTLE HAUL is another production-boosting Dumptor advantage. Heavy-duty constant-mesh transmission gives the same 3 fast speeds forward and reverse . . . saves turning at the loading unit, on the haul, at the dump . . . speeds cycles.

with 1-second gravity dump

K231

KOEHRING DUMPTOR®

EXCAVATORS . . . ½ TO 2½ YARDS CRANES . . . 7¾ TO 79½ TONS LIFT CAPACITIES



Highway Washout Demonstrates the Stability of SOIL-CEMENT Pavement

This photograph is a graphic demonstration of how stable soil-cement pavement* is. It shows a soil-cement base bridging a gap about 8 ft. long and 4 to 5 ft. wide after a storm washed out the subgrade.

The washout shown occurred on Cotton Grove Road in Madison County, Tenn. The unsupported span of soil-cement base carried normal traffic for some time before the washout was discovered and the section blocked to traffic. The 6-in. soil-cement pavement showed no damage.

Soil-cement has established a record for durability and economy for light-traffic, low-cost roads and streets. Thousands of miles of dependable, all-weather soil-cement pavements are now in use all over America. Many have served for 10, 15 and more years with little maintenance expense.

Soil-cement roads and streets are economical because (1) about 85 per cent of the required material is usually soil on or near the site and (2) they are easy and fast to build. For more information write today for free illustrated literature, distributed only in the United States and Canada.

*Soil-cement pavement consists of a soil-cement base and a bituminous surface.

PORTLAND CEMENT ASSOCIATION
DEPT. A3-28, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS
A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

in 1953 for the 16th Consecutive Year

ONLY AUSTIN-WESTERN POWER GRADERS give you ALL-WHEEL DRIVE PLUS ALL-WHEEL STEER

the matchless combination that delivers unequalled performance

Austin-Western

Power Graders
Road Rollers · Motor Sweepers

BALDWIN BLH LIMA-HAMILTON

Construction Equipment Division

Manufactured by
AUSTIN-WESTERN COMPANY
Subsidiary of Baldwin-Lima-Hamilton Corporation
AURORA, ILLINOIS, U.S.A.

GALION 503 Tandem Drive ECONOMY GRADER

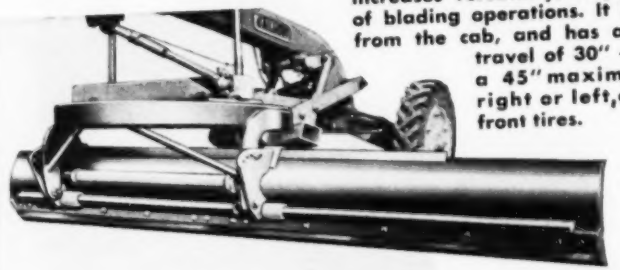
Gives you more "BIG GRADER" features than any other!

*** LEANING WHEELS**

Hydraulically operated from cab. Provides "big grader" maneuverability, front end stability, and traction on soft or sloping ground.

*** HYDRAULICALLY SHIFTABLE MOLDBOARD**

Increases versatility, scope, and ease of blading operations. It is operated from the cab, and has a horizontal travel of 30" — providing a 45" maximum reach, right or left, outside the front tires.



Other "special job" equipment available for increasing the usefulness of the Galion 503 Grader includes Snow Plow, Loader, Windrow Eliminator, and Bulldozer.

STANDING HEIGHT CAB *

All steel and rubber-mounted safety glass. Operator can work in a standing position with ease and unequalled visibility of work. Full-height hinged doors. Top half of cab easily removed. Adjustable windshields front and rear.

LARGE SIZE FRONT TIRES

Size 6.00-20 front tires are standard. Two larger sizes (7.50-20 or 8.25-20) available. *

*** FRONT SCARIFIER**

"V"-type hydraulic scarifier placed in the same position at front end of grader as on big graders. Completely visible from cab when in use. Downward pressure causes no loss of traction by the tandem drive wheels. Replaceable points.

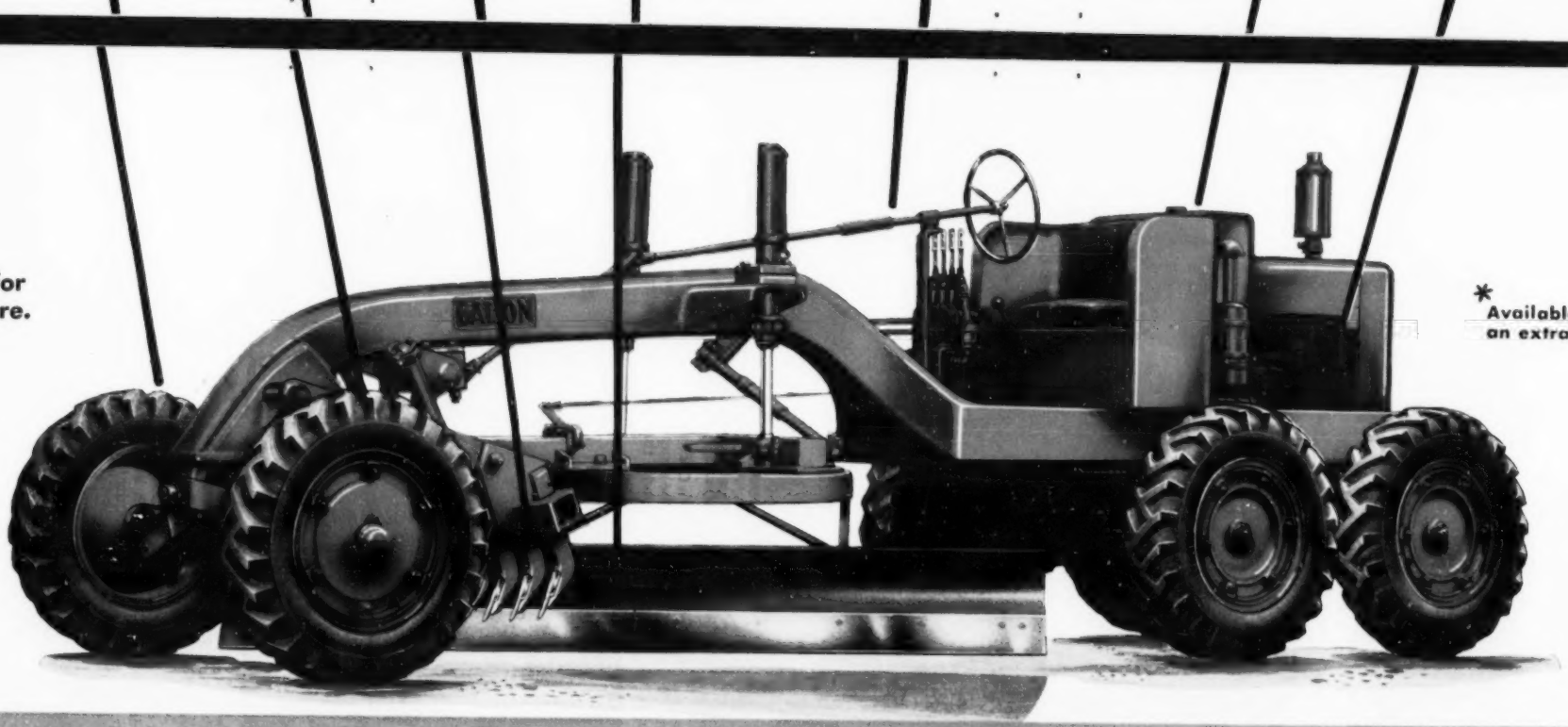
PLUS THESE STANDARD FEATURES

Positive four-wheel tandem drive . . . extra-strong, box-type, high-arched frame . . . heavy 4" solid steel drawbar with heavy-duty ball-and-socket connection to head block . . . extra-large hydraulic cylinders and direct drive hydraulic pump . . . 4 forward speeds 2.3 to 20.4 m.p.h. and high reverse of 4.3 m.p.h. . . . rugged high-clearance front axle . . . weight —8,720 lbs., blade pressure 4,975 lbs. — both without extras.

GASOLINE OR DIESEL ENGINE

A 40 h.p. gasoline engine is standard equipment. A 36.7 h.p. diesel engine is available. *

Write for literature.



* Available as an extra.

Gets Jobs Done in "BIG GRADER" Style!

A Thrifty Buy

With the GALION 503 you can put your road and street maintenance program in high gear — and do it without straining the budget!

On new construction it will save thousands of dollars in investment and operating costs over the costs with heavier graders.

Write for literature - TODAY!

ESTABLISHED GALION 1907

THE GALION IRON WORKS & MANUFACTURING COMPANY

General and Export Offices, Galion, Ohio, U.S.A.

Cable Address: GALIONIRON, Galion, Ohio

It's the Operators'

BEST BY A DAM SITE. Troy Hood and Jack Rank (shown here with Dirt Foreman Sam Crawford) operate TD-24s for Guy H. James, building the great Oahe Dam in South Dakota. Hood says: "I can keep right behind the scrapers—catch 'em sooner and push 'em out faster because TD-24 controls are easier." And Rank chimes in: "Much easier to handle than any other tractor."

"ALMOST THINKS FOR ITSELF!" That's what Jess Leatherwood says about the Big Red TD-24 he operates for Macon Construction Co., Franklin, N. C. "It pushes more, moves it faster and handles easier than any other crawler I've ever been on."

"WE RIP PLACES YOU'D USUALLY HAVE TO BLAST," says another Macon operator, Roy Cantrell. "We've been working in the Blue Ridge Mountains on rock you couldn't touch with a dozer till the TD-24 came along. Now we blade where we couldn't scratch before, and rip where we used to dynamite!"

"OUR TD-24s REQUIRE LESS SERVICE," says John Tickler, Service Superintendent for John E. Bloomer Construction Co. "These big red machines are very accessible, very easy to maintain. And when we do need help, the International Distributor is always on the job!"

Crawler!

Read what the operators and servicemen say about "Big Red", the International TD-24...

"HOW DO I LIKE 'BIG RED'?" asks George Miller. "Listen: This TD-24 is just the fastest and surest handling tractor there is, that's all! Nothing I've seen can touch it for moving dirt." George and his TD-24 move dirt in North Carolina for Kiker & Yount Construction Co.

"GREATEST THING I'VE SEEN," says Bruce Olson (right), TD-24 operator and Sec.-treas. of G. A. Olson Construction Co., Marshall, Minn. "The TD-24 is the easiest crawler of all to operate. The high-low shift is great for whipping around to the cut after dumping the load. It's the fastest equipment going for anything up to a 3,000-foot cycle!" Man in center is Glen Olson, Bruce's brother and company president. At left is Superintendent Donald Young.

Ask the men who know. Ask the operators. They know that *this* makes "Big Red" the Champ:

TD-24 POWER

148 maximum drawbar horsepower, more than any other crawler on the market.

TD-24 SPEED

Up to 7.8 m.p.h. with 8 forward speeds, 8 reverse. Moves loads faster, gets back quicker for more work-cycles per hour.

TD-24 STEERING

Fingertip control for pivot-turns, feathered-turns and *turns with power on both tracks.*

TD-24 STARTING

Exclusive International push-button starting for quick starts any time in any weather.

Want to know more reasons why the Big Red TD-24 is the work-champ of the world?

Ask your International Industrial Distributor. Ask TD-24 operators. Ask the men who know—and you'll be a TD-24 man yourself from then on in!

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

INTERNATIONAL HARVESTER

INTERNATIONAL

POWER THAT PAYS

A New 13.5 h.p.

CONCRETE CUTTER

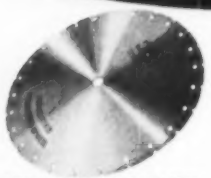
for only $580.00

Net f.o.b. factory

FELKER DI-MET MODEL 135

Here's your answer to all run-of-the-mill concrete cutting jobs at a new low in price! This light-weight 3 wheel Felker DI-MET machine is specially built for all those jobs where a big heavy-duty machine isn't necessary... Use it for cutting CONTRACTION JOINTS, CURBINGS, DRIVEWAYS; FOR INSTALLING UTILITY POLES; FOR TRENCHING, PATCHING, ETC!

Now you can own a genuine Felker DI-MET Concrete Cutter incorporating features resulting from years of experience in the industry—built by the *only* concrete cutter manufacturer who makes his own diamond abrasive blades!



DI-MET SEGMENTED DIAMOND WHEEL—Available in two types: STANDARD for hard, dense, cured concrete. SPECIAL for green, uncured concrete and asphalt.

FEATURES

EASY HANDLING—3 wheel design with light-weight alloy castings.

BIG BLADE CAPACITY—Utilizes from 8" to 18" diamond wheels. Cuts to 3½" depth with 12" wheel.

SPLIT, HINGED BLADE GUARD—For cutting close to curbs, etc. 12" standard, 18" optional equipment.

POWERFUL ENGINE—Full 13½ h.p. Wisconsin Model TF gives a surplus of power for every cutting requirement.

PRESSURE COOLANT supplied through external hose connections.

INSTANT BLADE DEPTH ADJUSTMENT with hand-wheel and screw.

SLOTTED BLADE COLLARS—Powerful coolant ejection completely flushes blade and kerf.

HUSKY SPINDLE—Mounted in Dodge S.C. self-aligning ball bearing pillow blocks. 1¾" single end arbor with keyway.

Get ALL the facts on the LOW-COST DI-MET MODEL *135. See your dealer or write us today!*

FELKER DI-MET

FELKER MANUFACTURING CO.

Torrance, California

World's Largest Manufacturer of Diamond Abrasive Cut-Off Wheels and Equipment

They Come to **New York** from everywhere

to enjoy the Value, Comfort and Convenience of the

HOTEL **Woodward**

BROADWAY at 55th STREET

Ideal accommodations for 800 guests

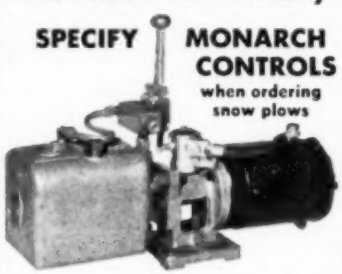
Private baths, showers and radio. Television!

FROM $3.50 SINGLE $5.00 DOUBLE

POWER HYDRAULICS

For Snow Plows and Road Machinery

SPECIFY MONARCH CONTROLS when ordering snow plows

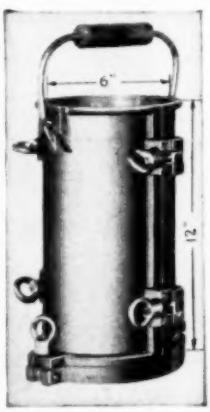


- Clutch operated (Optional)
- Thousands in use
- Fan Belt or Electrically Driven
- Fits All Trucks

MONARCH ROAD MACH. CO.

322 North Front Ave.

GRAND RAPIDS 4, MICHIGAN



for concrete compression test specimens USE MOLINE

CONCRETE TEST CYLINDER MOLDS

You can produce accurate test specimens to exact measurements with Moline Molds. They meet all ASTM requirements and are virtually indestructible—because they are made of refined malleable iron. Portable for laboratory or field work. Various sizes available including standard 6" x 12" Model A (illustrated). Remember—a test is only as good as the specimen.

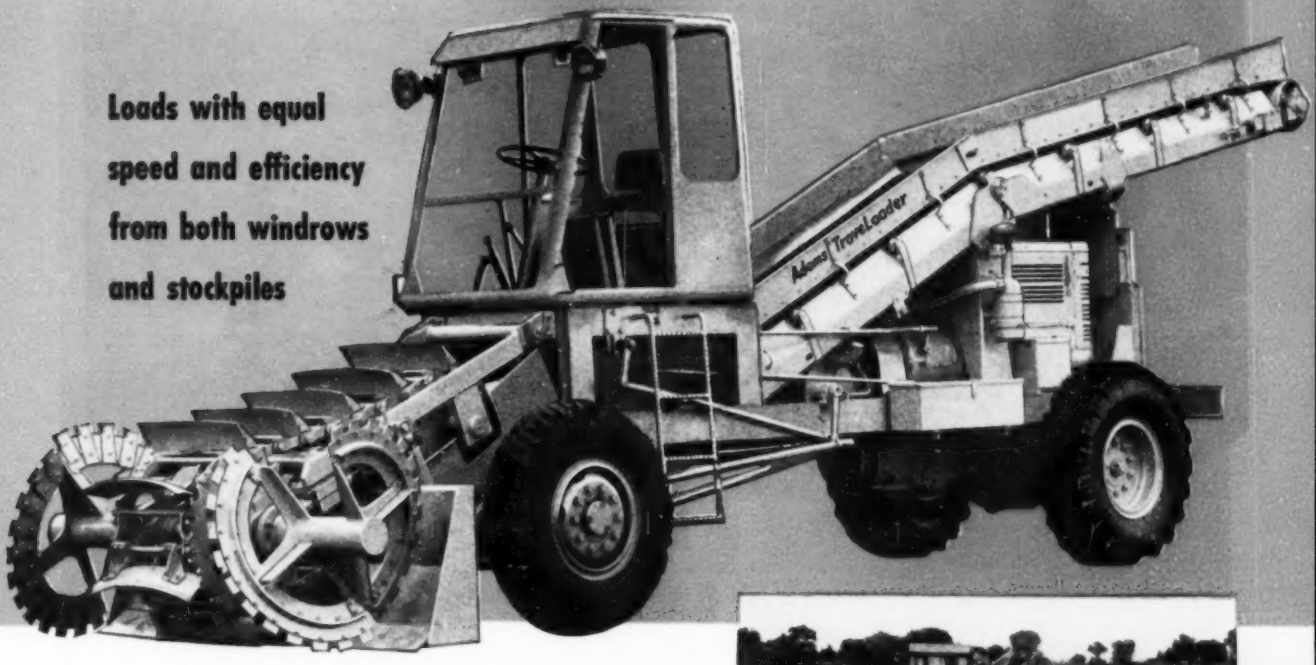
MOLINE IRON WORKS Moline, Ill., U.S.A.

75 Years of Service

PLAN NOW TO GET AN

Adams TraveLoader

Loads with equal speed and efficiency from both windrows and stockpiles



● For high-speed loading, at low cost—from either windrows or stockpiles—you'll find the *All-Purpose* Adams TraveLoader in a class by itself.

On road and street jobs, the TraveLoader picks up and loads surplus windrowed material—dirt, sod, scarified material, snow, etc.—at better than a truck-a-minute clip . . . and does it without interrupting regular flow of traffic.

The TraveLoader handles stockpile loading with equal speed and efficiency, whatever the material—gravel, sand, crushed stone, slag, etc. . . . sends trucks on their way in jig time with full, well-balanced loads.

The TraveLoader's superior performance stems from a host of advanced features, such as **High-Speed, Full-Floating Feeder—Adjustable Conveyor—High, Centrally-Located Cab—Wide Range of Working Speeds.**

Ask your Adams dealer to show you how the TraveLoader will step up production and cut costs on your jobs.

J. D. ADAMS MANUFACTURING CO. • INDIANAPOLIS, IND.

ADAMS

Motor Graders **TraveLoaders** **Pull-Type Graders**

In Dirt-Moving

LOADS FULL ON SHORT RUNS

"Boiling" action pushes dirt up through center of load, spreads it evenly on top. Big chunks are broken up to fill voids, giving you a load of uniform density for a compact fill.

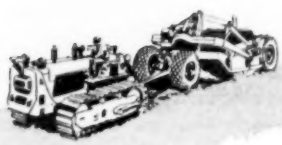
DUMPS CLEAN AND QUICK

Dumping is fast and clean with an even, controlled spread. Positive rolling ejection requires less horsepower, lets you dump in higher tractor gear to maintain fast cycle speed, regardless of type of material being hauled.

HAULS EASILY FOR FAST CYCLES

Here are just a few features that provide easy, smooth hauling over any kind of terrain: big low pressure tires provide maximum flotation, reduce rolling resistance even on soft ground . . . front axle has drop center that lowers tongue for direct drawbar pull, avoiding downward thrust that bogs down front wheels of scrapers with high tongue . . . fairlead sheaves are low on bolster to eliminate downward pull when tension is applied to cable—no tendency to pull the scraper over . . . tapered roller bearings further reduce rolling resistance . . . double-disc, drum-type wheels take heavy loads without clogging.

These features — and more — add up to more output per cycle, more cycles in every working shift. See your International Industrial Tractor Distributor soon for the complete story of the dirt-moving features of The Big-Red Team.



The BIG RED TEAM . . .

. . . combination of International TD-24 tractor and Bucyrus-Erie Scraper.

Three Sizes of B-Type Scrapers

B-113	10 yd.	(Struck)
B-170A	16 yd.	(Struck)
B-250	22 yd.	(Struck)

BUCYRUS ERIE

SOUTH MILWAUKEE WISCONSIN

22T52C

GULF PRODUCTS *and* FINE SERVICE

keep equipment rolling

on Virginia Sewage Treatment Project

Thompson-Starrett Company, Inc., Arlington, Va., is building a large sewage treatment plant for that city. The photo shows progress of the work in October 1952. The modern equipment on the job is lubricated and fueled with Gulf products.

ON all types of construction projects, Gulf lubricants and fuels play an important part in keeping equipment on the job—and operating efficiently.

Leading contractors find that it is good profit insurance, as well as real economy, to use Gulf products. Always of the same uniform high quality, they work as a team to help them make more hauls, with fewer overhauls and lower maintenance costs.

Write, wire, or phone your nearest Gulf office and arrange to use Gulf products on your next job. They are quickly available to you through more than 1400 warehouses in 31 states from Maine to New Mexico.

GULF

Our Whites do more work!

REPORT from the construction industry from coast to coast: "Our Whites do *more* work!"

Functional design of this *modern* truck permits more payload . . . driving ease . . . outstanding maneuverability . . . substantial maintenance savings.

In every way, it proves its performance every day, in hardest kind of service. On the job for Southwest Paving Company . . . or in *your* business . . . it's today's way to do more work . . . in less time . . . at lower cost.

White 3000 Production Line Saves Time — One of a fleet of White Model 3022 PLT's owned by Southwest Paving Co., Sun Valley, Calif., operators of some of the world's largest asphalt plants. This unit hauls 9½-tons of asphalt . . . speeds paving projects for this well-known paving contractor.

THE WHITE MOTOR COMPANY
Cleveland 1, Ohio

White

FOR MORE THAN 50 YEARS THE GREATEST NAME IN TRUCKS

ALONE IN ITS CLASS for TOP CAPACITY!

THE UNIVERSAL 880 SENIOR "R"

BIG 4'x12' SCREEN

Full 48 square feet of screening area and inclined mounting for top capacity.

BIG 1036 JAW CRUSHER

Famous Universal overhead eccentric force feed action and design for top capacity.

FIELD PROVED AND PORTABLE

Operators report tremendous capacities . . . fast and easy moves and setups. It's designed to meet state weight restrictions.

BIG 3022 ROLL CRUSHER

Roller bearing star gear drive. Designed to use its full 22" width for top capacity.

BIG 30" CONVEYORS

Top capacity loads handled easily.

Before you buy get full details on the new, advanced design Senior "R" Gravelmaster. See your Universal distributor or write for literature.

UNIVERSAL ENGINEERING CORPORATION *Subsidiary of* **PETTIBONE MULLIKEN CORPORATION**

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Phone 7105

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Phone Spaulding 2-9300

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OSGOOD Model 1000
2½ Cu. Yd. Shovel

building tough roads . . . digging hard rock

OSGOOD Shovels keep hauling equipment high-balling

Get on the track to more profits with OSGOOD-GENERAL

POWER SHOVELS, CRANES, DRAGLINES, CLAMSHELLS, PILE DRIVERS AND HOES
½ TO 2½ CUBIC YARDS
10 TO 60 TONS CAPACITY
CRAWLER, TRUCK, OR TRAILER-MOUNTED
MOBILCRANES
DIESEL, GASOLINE OR ELECTRIC

5314

There's "Gravy" even in the rough jobs, with OSGOOD Machines setting the pace. They're engineered throughout for smooth operation and long life on roads . . . quarries . . . coal loading . . . demolition jobs.

OSGOOD'S "Torque Converter—Air Tube Clutch" combination is a natural. Speeds up production . . . eliminates "bouncing" and shock . . . with far less wear, less down time and savings up to 25% in maintenance costs.

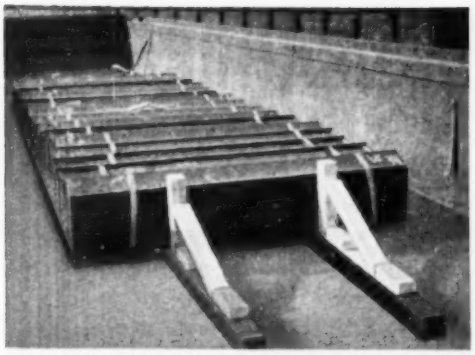
"It's the smoothest machine I ever operated," says the man at the controls.

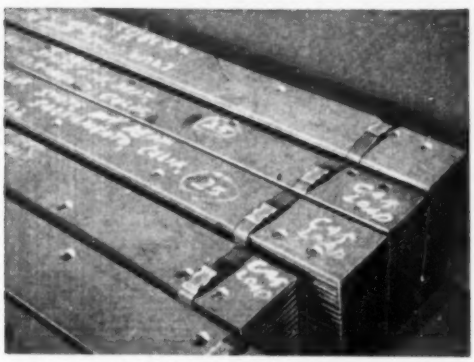
MEMBER PCSA

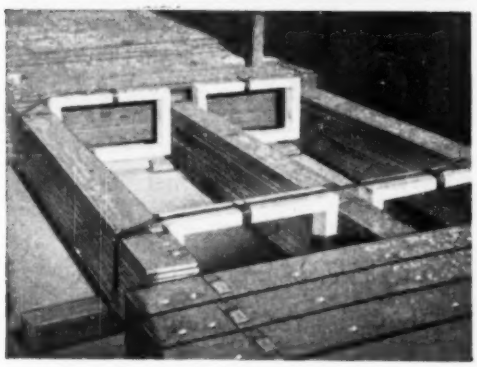
OSGOOD O-G GENERAL

MARION, OHIO

OVER 100 YEARS OF ENGINEERING PROGRESS







PACAL BLADES

for all your earthmoving equipment

Just as Pacal Blades resist wear, fit tighter . . . last longer, Pacal does a job for you. Whether you're just around the corner or 2,000 miles away, your Pacal Blades are expedited carefully. When you want blades, call on Pacal.

Use PACAL Heat Treated Plow Bolts . . . they increase the efficiency of PACAL Blades.

Write Department BK-33

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It's in your Office Now . . .
(or will be soon)

KEEP IT HANDY—
USE IT OFTEN—

Your most useful source of Buying Information

- This book saves you cabinet and floor space and the secretarial time that would otherwise be spent in classifying and filing individual manufacturers' catalogs.
- It saves you, too, the time and trouble of writing to manufacturers for the information you need. Here are enough facts to enable you to study the product that interests you and to decide whether to call your local dealer or distributor for decisive action.
- When you want information quickly, on a certain class of product or on the product of a specific manufacturer, turn first to the index for the name or trade name of the product in which you are interested and then to the manufacturers' catalog which is arranged in alphabetical order by manufacturers' name.

When you are in the market for new construction equipment, materials or supplies, turn to Gillette's Heavy Construction Prefiled Catalogs for information on what to buy and from whom. Here's the swift, economical and satisfying way to make your pre-purchase studies. In this single volume America's leading manufacturers of these products have placed their catalogs, many of them specially designed for your convenience—"boiled down" to save you time and energy.

CATALOGS...

the way you asked for them—PREFILED

Contractors, engineers, public officials PREFER receiving manufacturers' catalogs PREFILED rather than to have individual catalogs sent by manufacturers. Individual catalogs are usually mislaid or thrown away.

The manufacturers listed below have followed your wishes—and at considerable expense. Through the PREFILED method they have supplied you with catalog information on their products in the current 1953 edition of Gillette's Heavy Construction Catalog File (See opposite page). Be sure to take advantage of this information. Use the Gillette Catalog File all the time. Keep it handy every day—every week. Use it often. Consult the Catalog File when you want information before buying new equipment, materials or supplies.

Here is the list of manufacturers who have supplied you with buying information on their products.

Adams Manufacturing Co., J. D.
Allis-Chalmers Manufacturing Co.
All Purpose Spreader Company
American Air Filter Co.
American Bosch Corporation
American-Coleman Company
American Manganese Steel Division
American Marietta Co.
American Steel & Wire
American Tractor Equipment Corp.
Anthony Company
Armco Drainage & Metal Products, Inc.
Arrow Manufacturing Company
Austin-Western Company

Baldwin-Lima-Hamilton Corp.
Badger Machine Co.
C. L. Ballard
Beardsley and Piper
Bicknell Manufacturing Company
Briscoe & Son, E. V.
Bros Boiler & Mfg. Co., Wm.
Buda Company, The
Buffalo-Springfield Roller Co., The
Butler Bin Company

Carey Manufacturing Co., The Philip
Carson Company, H. Y.
Carter Co., Ralph B.
C. H. & E. Manufacturing Co., Inc.
Chausse Manufacturing Co., Inc.
Cleaver-Brooks Company
Cleveland Formgrader Co., The
Cleveland Frog and Crossing Co.
Cleveland Trencher Company, The
Clipper Manufacturing Co.
Clyde Iron Works

Concrete Surfacing Machine Co.
Crockett Brothers
Cummer & Son Company, The F. D.
Cummins Engine Company, Inc.

Davenport Besler Corporation
Detroit Diesel Engine Division
Dixie Tally-Ho, Inc.
Dorsey Trailers

Eagle Crusher Co., Inc.
Electric Tamper & Equipment Co.
Erie Steel Construction Company

Felker Manufacturing Co.
Fiske Brothers Refining Co.
Flexible Road Joint Machine Co., The
Flintkote Company, The
Foundation Equipment Corporation
Frace Manufacturing Co.

Galion Allsteel Body Company
Galion Iron Works & Mfg. Company
Gar Wood Industries, Inc.
General Excavator Co.
General Motors Corporation
Gledhill Road Machinery Co., The
Goodall Rubber Company

Haiss Mfg. Co., Inc., Geo.
H. & L. Tooth Co.
Hammermills, Inc.
Harnischfeger Corporation
Hauck Manufacturing Co.
Heltzel Steel Form & Iron Co.
Hercules Motors Corporation
Herman Nelson
Highway Equipment Co., Inc.
Hose Accessories Company

Hough Co., The Frank G.
Huber Manufacturing Co., The

Jackson Vibrators, Inc.
Johnston and Jennings Co.
Joint Equipment Company, Inc.
Joy Manufacturing Company

Keystone Asphalt Products Company
Kiesler Co., Jos. E.

La Crosse Trailer Corporation
Leece-Neville Co., The
Le Roi Company
Lincoln Electric Company, The
Littleford Bros., Inc.
Lubriplate Division

Marlow Pumps
Master Vibrator Company
Michigan Power Shovel Company
Minneapolis-Moline

Naugatuck Chemical Division
Noble Company

Oliver Corporation, The
Omaha Standard
Onan, D. W. & Sons, Inc.
Osgood-General
Ottawa Steel Products, Inc.
Owen Bucket Co., The

Pacific Car and Foundry Company
Page Engineering Company
Philadelphia Textile Finishers, Inc.
Phoenix Products Co.
Pioneer Engineering Works
Pitman Manufacturing Company
Porter, Inc., H. K.

Republic Steel Corporation
Riddell Corp., W. A.

Rogers Brothers Corporation

St. Paul Hydraulic Hoist
Salem Tool Company, The
Sauerman Bros., Inc.
Schramm, Inc.
Service Supply Corporation
Servicised Products Corp.
Shunk Manufacturing Company
Standard Steel Corporation
Sterling Engineering & Mfg. Co.
Stow Manufacturing Company
Sumner Equipment Limited
Super-Compactors, Inc.
Symons Clamp & Manufacturing Co.
Syntron Company

Talbert Construction Equip. Co.
Tarrant Mfg. Co.
Thurman Machine Co., The
Timken Roller Bearing Co., The
Titan Chain Saws, Inc.
Transport Trailers, Inc.
Tuthill Spring Company

Universal Engineering Corp.

Vibro-Plus Products, Inc.
Vulcan Tool Manufacturing Co.

Warner & Swasey Co.
Waterloo Foundry Co., Inc.
Waukesha Motor Company
Wellman Engineering Co., The
Whitestown Trencher Co., Inc.
Wico Electric Company
Williams Form Engineering Corp.
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Wyoming Valley Equipment Co., Inc.

Yaun Manufacturing Co., Inc.

YOU CAN ...

TAKE IT WITH YOU

IT'S PORTABLE!
Easily transported from job to job and set up for use in minutes.

Capacities:
20, 25 & 30 Ton
Platform Lengths:
18, 22, 24 and 30 ft.

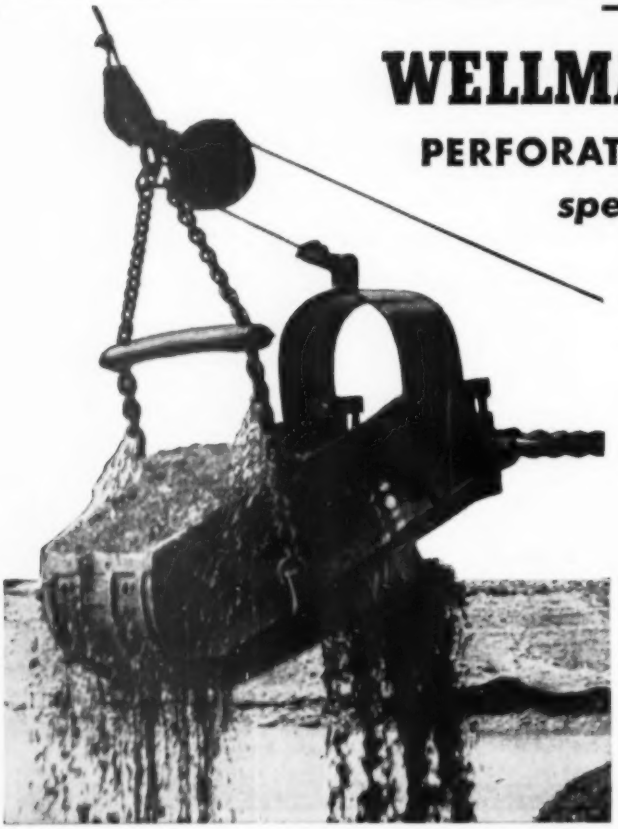
REMOVABLE SIDE ARMS
The assembled scale can be moved by merely removing six bolts which hold the side levers in place. The complete scale can then be lifted as a unit and loaded onto a truck. Once positioned, it can be ready for use in minutes.

ACCURATE Perfectly balanced for lifetime accuracy. Wide steel bases, at both ends, support scale therefore require no concrete footing. Easy to read weighbeam is chrome-plated. Other vital parts are electro-plated against corrosion.

THE THURMAN PORTABLE TRUCK SCALE

Est 1918

THURMAN MACHINE CO. SCALE DIVISION 156 North Fifth Street Columbus, Ohio Dept. E



WELLMAN *Williams Type*

PERFORATED DRAGLINE BUCKET

speeds the wet jobs

• You get big loads fast with this Wellman Perforated Dragline Bucket because excess water goes out while gravel stays in on jobs such as illustrated.

Built of special alloy steel—all welded for strength plus light weight. You can work faster with less maintenance with Wellman dragline buckets.

Want Facts?

Write for free descriptive bulletins.

Dragline, Clamshell, Custom-Built Buckets, Stone and Wood Grabs.

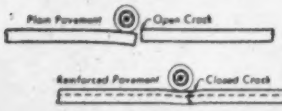
THE WELLMAN ENGINEERING COMPANY

7000 Central Avenue • Cleveland 4, Ohio

The Edens Expressway

Shown here is a typical section of the Edens Expressway, an important part of the highway network that serves the Chicago area. Cook County highway engineers, working with Illinois State highway engineers, specified American Welded Wire Fabric reinforcement with contraction joint spaces of 100'-0" centers to insure long, trouble-free service and a smooth riding surface from this main traffic artery—and also reduced construction costs.

IDEAL FOR USE with modern paving machinery, American Welded Wire Fabric is also generally preferred for concrete reinforcement in city streets, curbs, sidewalks and sewers—in culverts, abutments and bridges—in foundations, yards, floors, walls and roofs of all sorts of buildings.



AS THE WHEEL LOAD approaches an open crack in plain pavement, one slab end carries the entire load. As the wheel approaches the closed crack in pavement reinforced with American Welded Wire Fabric, both slab ends, instead of one, carry the load, preventing damage to the slab and to the subgrade, reducing the rate of cracking, preventing heaving and spalling, which reduces maintenance cost and increases the service life of the highway.

built stronger, to last longer and to ride smoother with AMERICAN WELDED WIRE FABRIC

On many a mile of the Nation's highway system, American Welded Wire Fabric has helped to improve driving conditions, reduce construction costs and save important money on maintenance—and very important, it protects the public's investment through longer pavement life.

With American Welded Wire Fabric, the many small high-yield steel members keep the driving surface smooth and even, make possible longer slabs and fewer joints, hence increase riding comfort and safety.

The big flat sheets are easily placed by minimum crews, lie flat and stay put during pouring. Higher allowable stresses mean that you use less steel, less concrete. The result is—savings on materials and labor that sharply reduce construction costs.

Long experience has proved that American Welded Wire Fabric reinforcement reduces the rate of cracking, prevents progressive damage to slab and subgrade, insures additional years of trouble-free service, thus cutting maintenance costs to the bone.

Our specialists will be glad to consult with you on your individual reinforcing problems. You will find that most jobs can be handled with some of the many standard designs, styles and sizes of American Welded Wire Fabric that are now readily available. Why not drop a line to our nearest sales office for a copy of the American Welded Wire Fabric Catalog.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: CLEVELAND, OHIO

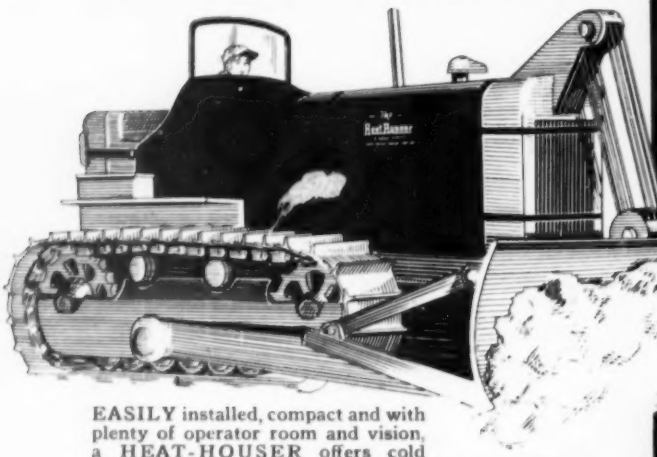
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

EVERY TYPE OF REINFORCED CONCRETE CONSTRUCTION NEEDS

U·S·S AMERICAN WELDED WIRE FABRIC

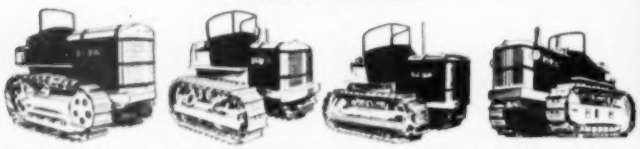
UNITED STATES STEEL

DON'T LET COLD WEATHER TIE-UP YOUR OPERATOR OR EQUIPMENT



EASILY installed, compact and with plenty of operator room and vision, a HEAT-HOUSER offers cold weather protection for operator and tractor. Heavy duty waterproofed canvas plus many design features will make HEAT-HOUSER a must with your equipment.

WRITE TODAY FOR COMPLETE DETAILS ON THE HEAT HOUSER INDUSTRIAL. MODELS FOR MOST TRACK TYPE EQUIPMENT.

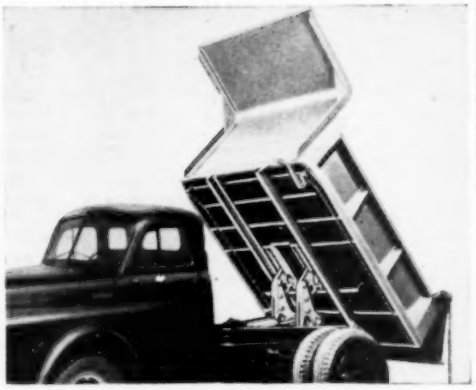


Increase Operator and Equipment Efficiency with

Heat-Houser Industrial

FORT DODGE TENT & AWNING CO.
FORT DODGE, IOWA

DO YOU LIKE YOUR EQUIPMENT TOUGH?



Galion Model 700 hydraulic hoist with Model 12 contractors' heavy duty body.

▶ If you need dump truck equipment that is built to take a beating day after day without downtime . . . that will work longer with less maintenance and operating cost . . . that you can be proud to own and operate . . . you should become a Galion user—right away!

▶ There's a standard Galion model to meet virtually every need of every contractor. But, if you need extra heavy duty units for jobs that are tougher than tough, Galion will be glad to design and build them to your specifications. A-6720

Just see your nearest Galion distributor—today!

THE GALION ALLSTEEL BODY COMPANY • GALION, OHIO

an ACCO product

TRU-LAY Preformed WIRE ROPE

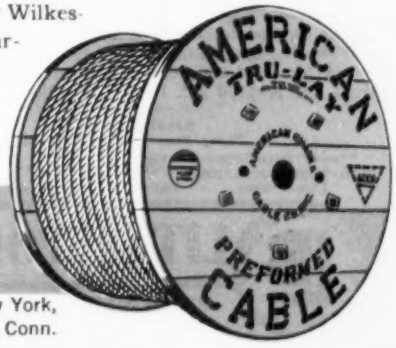
Why TRU-LAY Scraper Ropes Last Longer . . .

• Quality materials and expert manufacturing are factors in the longer life of TRU-LAY GREEN STRAND scraper ropes. But the most important thing is the grade and construction.

Sharp bends around small sheaves, abrasion from dust and dirt, shock loads—these are the things that sort the men from the boys when it comes to the life of the wire rope. If you want to hold down service costs, these are the factors to be considered when you are thinking about ordering new wire rope.

AMERICAN CABLE engineers have made unending checks of scraper ropes in service and know the best construction for the job. They designed a rope with the exactly right combination of wire sizes and core—made from improved plow steel—and *pre*formed. They put a green strand in it for quick identification.

So when you need scraper rope, or rope for any of your earthmoving equipment—specify, and get, TRU-LAY Preformed GREEN STRAND. It's the one sure way for you to get the best possible, longest lasting, most economical wire rope for each machine you operate. See your AMERICAN CABLE distributor today, or write our Wilkes-Barre office for further information.



ACCO

TRADE MARK

AMERICAN CABLE DIVISION
AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

3 REASONS

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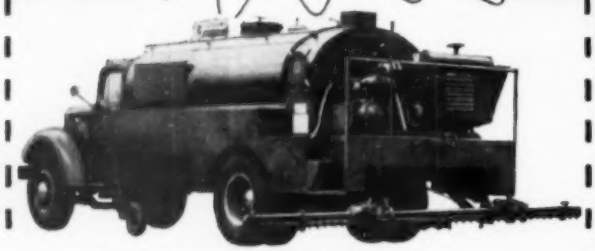

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3 EFFICIENT OPERATION – is offered to Contractors and Highway Departments because the "Spray-Master" was designed to give accurate spraying under all conditions and at low cost. To this end the "Spray-Master" has feature after feature eliminating excessive labor. Each operational function is simple and efficient speeding up the application of Bituminous materials on Construction and Maintenance Jobs.
Littleford "Spray-Master" Distributors are made in Truck Mounted and Semi-Trailer Models ranging in size from 800 to 4000 gal. Send for Bulletin 14 for details.

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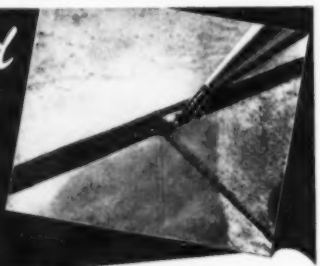

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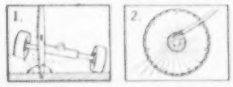

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CASE HISTORY No. 528-2

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INSTALLATION: GM 3-71 Diesel, replacing an 8 cylinder gasoline engine in a 3/4 yard dragline equipped with 46 foot boom.

PERFORMANCE: Plant Superintendent H. G. Hoffman reports the power and quick pickup of the GM Diesel engine permit this dragline to do 25% more work. Fuel and maintenance costs are both reduced.

PRODUCTION WENT UP 25%

when GM Diesel went in

"General Motors Diesel power made a real shovel out of this unit," says Mr. Hoffman. "We also use a 6-71 to power an asphalt plant, and recently, when we bought a new shovel, we ordered it equipped with GM Diesel power."

In new equipment or old, a 2-cycle GM Diesel gets more work done at lower cost. It produces power at every piston downstroke to give equipment maximum torque the instant a load hits—before engine r.p.m. falls off. A GM Diesel starts at the push of a button, burns few gallons of low-cost fuel, and delivers years of dependable service. Parts cost less and are readily available. Talk with other GM Diesel owners. Then see your GM Diesel distributor for economical horsepower — for any job.

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ANNOUNCING 3 NEW MODELS IN THE 100 SERIES

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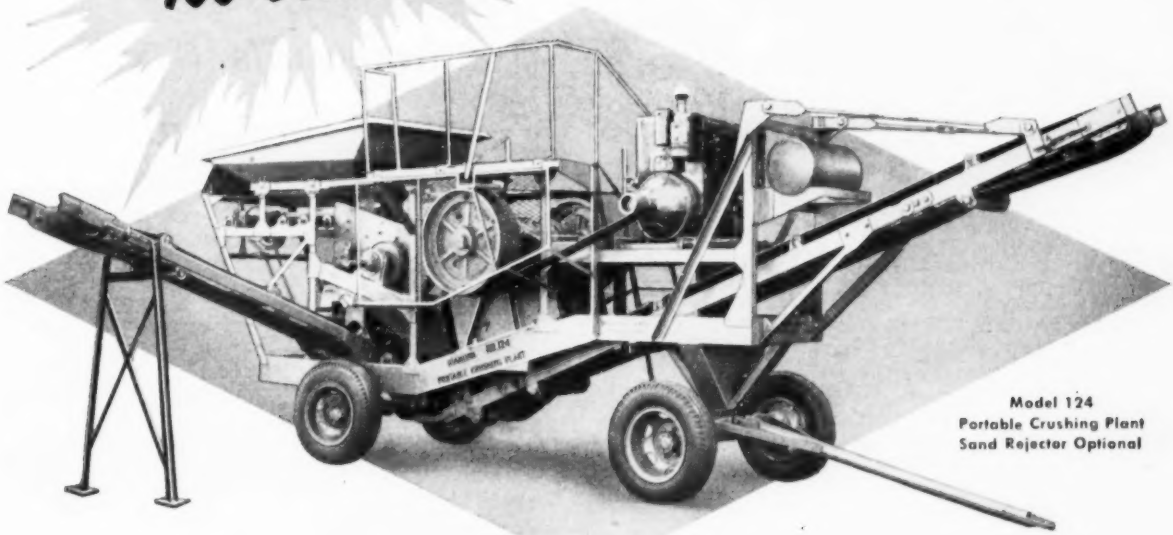

Model 124
Portable Crushing Plant
Sand Rejector Optional

3 MODELS... capacities from 30 to 70 tons/hr.

Designed for frequent moving, quick set-up and knock-down to give you more efficient crushing *where* you want it—*when* you want it. Ideal for counties and townships, secondary and access road construction, and areas where a high degree of mobility is needed. Low hopper height (10' 4½") gives ease of loading with ½ or ⅜ cu. yd. shovel. Heavy Duty Grizzly openings give higher crusher production with minimum of scalping. Location of wheel bar tongue and short wheel base provides needed maneuverability on road or in pit. Hinged delivery conveyor eliminates dismantling for towing. Mechanical or air brakes and fully guarded drives mean added safety. Adjustable single eccentric plate feeder provides a constant, even flow of pit run material.

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Unlike ordinary friction material, Velvetouch is made from powdered metals, compressed and fused to a strong, steel backing plate. As a result, it runs cooler, guards against scoring . . . can't rot or burn like asbestos. In addition, it cuts chattering and grabbing to give you new operating smoothness.

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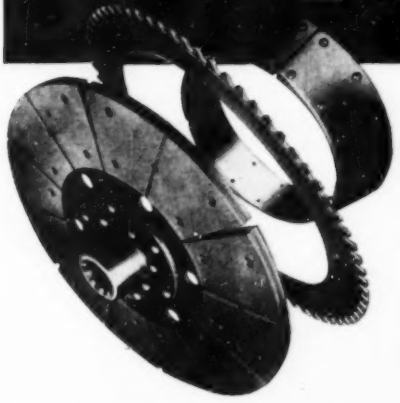

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The Cat D13000 powered a Gardner-Denver 365-cubic-foot portable air compressor, beating out steady power in this high altitude day-in and day-out.

"Caterpillar equipment stood up to these conditions. It's tops in work of this nature," reports A. H. Cranmer, superintendent of Whiting and Haymond, contractors on the job. "And the dealer takes care of us in grand shape. There will be no shutdown because of lack of parts."

Just as important as their dependability is the economy of Caterpillar Diesel Engines. They operate without sputtering or dying—without fouling in any way—on low-cost No. 2 furnace oil.

Caterpillar Engines are available in machines built by leading equipment manufacturers. Be sure to *specify* Caterpillar power in the equipment you buy.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

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REG. U. S. PAT. OFF.

Diesel Engines
Electric Sets

Roads and Streets in the News

What the state highway departments accomplished in '52, plan for '53

(Continuing from February Roads and Streets)

New Jersey. Aside from the gigantic Garden State Parkway toll highway project, this state will see a high level of road construction through the state highway department in 1953. According to R. J. Abbott, commissioner, $20,100,000 in state highway and $3,046,000 in federal and state aid secondary road construction will be under contract in the first half.

During 1952 the highway department completed 53.7 miles of road at cost of $17,217,000, with another $3,800,000 in secondary projects. During the calendar year over $28 million in projects were awarded some of which will carry over.

Florida. Florida road work hit a fast pace last year, with $56,983,000 spent by the state road department in the first 11 months. According to M. A. Conner, Engineer of Traffic and Planning, this work consisted of 697 miles of pimary and 651 miles of secondary projects, completed or under way as of Nov. 30, 1952.

Massachusetts. Concentration on major through-state or metropolitan arterials is the feature of the recent road program in Massachusetts, where $400 million in road bonds have greatly accelerated road work.

On through-state project, according to the Department of Public Works, 21 contracts were awarded in 1952 for 27 miles of road including 34 bridges at a cost of $62,593,000. This includes a portion of the very costly Boston Central Artery, an elevated highway through heart of city.

On other arterial roads over the state, 42 contracts were awarded for 26 miles totaling $7,601,000, with an additional $35,500,000 spent under the maintenance program. The state also contributed $4,000,000 in financing half the cost of rebuilding about 140 miles of city, town and country roads.

A somewhat enlarged highway program is in prospect in Massachusetts this year, with a bond issue of $184 million becoming effective in January, 1953, this sum required to be under contract by December, 1956.

Design changes cited by a department spokesman include greater use of pre-cast concrete beams for bridge construction, and the most extensive program of rubber-asphalt road construction of any state, aggregating several hundred miles to date.

Minnesota. Trunk highway projects placed under contract during 1952 included the following:

Grading	390.4 miles
Concrete paving	83.1 miles
Stabilized base and bituminous surfacing	539.2 miles
Bituminous surfacing	228.1 miles
Widening and resurf.	22.9 miles
Bridges	33 (No.)
Misc. jobs	31 (No.)
Total construction cost	$33,309,000

Including engineering this represents $35.5 millions. Actually nearly $38 million was spent on construction during the year, as a result of large carry-over from the rainy 1951 season (a record $15 million carried over).

The state also awarded 226 federal-aid secondary projects, acting as agent for the counties, aggregating $7,819,000.

Interests seeking to divert highway revenues proposed a state constitutional amendment in November. This measure, the third such try, was decisively defeated at the polls. Many good roads organizations and state and country highway officials are uniting in support of a legislative proposal for a comprehensive and impartial study of the entire highway problem in Minnesota.

California. The California state highway program includes $82,416,000 budgeted for 530 projects in the fiscal year ending June 30, 1953. Plans are for providing $84,114,000 for 560 projects in the next fiscal period. As of January 1, 259 contracts were in force, covering 444 miles of roadway at an estimated cost of $152,000,000, according to R. M. Gillis, Deputy State Highway Engineer. These sums do not include the secondary road program.

Arizona. Construction expenditures for 1952 on state road work totaled $14,000,000 and 201 miles of projects were opened to traffic, according to R. C. Perkins, State Highway Engineer.

Virginia. The Commonwealth's road program is expected to remain on an even keel, with about $29 million expended in the present year, equaling

Progress made on expressways for Boston

★ Revitalized by the $400 million in bonds issued recently in the Massachusetts road program, the Boston expressway program made big strides in 1952. Shown here are interchange and ramp structures on the new East Boston Expressway, an $8,000,000 project connecting Sumner Tunnel, Logan Airport and Massachusetts Route 1 C, completed during 1952 summer. V. Barletta Co., of Boston, Contractor.

Oregon plans $35 million roadbuilding year

1952 Activities		
Construction contracts awarded		$31,168,000
Expended on construction projects:		
Bond projects	$12,000,000	
Federal-aid projects	14,850,000	
State, county and city projects	3,815,000	
Total		$30,665,000
Construction completed during year:		
Grading		180 miles
Rock or gravel base		247 miles
Oil treatment		100 miles
Asphaltic concrete paving		201 miles
Contemplated Activities, 1953		
Construction contracts to be awarded		$24,000,000
To be expended on construction contracts:		
Bond projects	$18,000,000	
Federal-aid projects	14,400,000	
State, county and city projects	2,715,000	
Total		$35,115,000
Construction to be completed during year:		
Grading		200 miles
Rock or gravel base		275 miles
Oil treatment		100 miles
Asphaltic concrete paving		230 miles

North Carolina winding up huge bond program

Miles Primary Road Built in 1952 (Estimated)	
All Types	850
Miles Secondary Road Built in 1952 (Estimated)	
New Hard Surfacing, Miles	3640
Stabilization	4524
Estimated Mileage to be Built in 1953	
Bituminous Mixes and Treated Types	2580
Other Types (Grading, Light Stabilization, Retreatment, Etc.)	1060
Estimated Construction Expenditures (1952)	$104,000,000
Estimated Maintenance Expenditures (1952)	25,500,000
Estimated Construction Expenditures (1953)	$ 65,223,000
Estimated Maintenance Expenditures (1953)	32,789,000

the 1952 program. Completed projects last year totaled 620 miles.

As noted by R. P. Ellison, Executive Assistant, the department engineers are working on a program to superelevate curves on old alignments, provide additional truck lanes on hills, and adopt limited access design for all roads where practical to do so.

Nebraska. Nebraska's road program was "off" in 1952, with only eight million dollars obligated for new roads, as compared with thirteen million in 1951. The program last year included 138 miles of grading and structures, 22 miles of new concrete, 189 miles of bituminous surfacing, 175 miles of graveling, 15 bridges, 22 guard rail contracts.

According to the Department of Roads and Irrigation, only $4,535,000 in state and federal funds can be obligated in 1953 unless the legislature provides additional funds.

New York. New York's record roadbuilding year included the award of construction or reconstruction contracts for 735 miles of roads for nearly $280 million. These figures included 280 miles of Thruway work, 20 miles of arterials and 59 miles of parkways.

Some public concern has been expressed over the small amount of improvements being made or planned on the general state primary network.

Maryland. This state put $26,123,000 in state road projects under contract in 1952, and plans a $28,000,000 year ahead. The 1952 work consisted of 109 miles of roads and their related bridges, plus about 19 miles of miscellaneous type projects. About 25 miles of concrete pavement was involved, along with 5 miles of penetration macadam, 61 miles of asphaltic concrete, 15 miles of bituminous treated gravel, and 2 miles of plain gravel.

The long-range construction program for Maryland (R&S, Dec. '52) calling for expenditure of $558 million on roads over a 12-year period, is under consideration at the present time. The State Roads Commission has prepared an attractive booklet, "The Road Ahead," which visualizes the state's highway need and outlines the elements of this program, to be financed partly by tolls and bond proceeds.

Oregon. The state's highway program, as outlined by R. H. Baldock, state highway engineer, will include $35,115,000 programed for new construction in 1953, compared with $30,665,000 in 1952.

Effective November 4, 1952, revenues from commercial trucks are increased to the extent of about $2,000,000 per year. This increase was to have gone into effect on January 1, 1952, but, by action of trucking interests, was referred to vote of the people. The vote on November 4 favored the increase by a large majority. At the same time, vote of the people sustained by a large majority the principle of "weight-mile taxation" on trucks.

The 1951 Legislature authorized bonding for highway construction to the extent of $40,000,000, the bonds to be sold at the rate of $15,000,000 per year. $30,000,000 of this bond money has been contracted and the remaining $10,000,000 will be contracted by May, 1953.

In Oregon, the most notable trend in highway construction is the trend toward grade separations, channelization and controlled access. Interstate routes and some others are being relocated and reconstructed with few, if any, crossings at grade and with accesses at only the more important of intersecting roads. Another trend is toward the providing of so-called "climbing lanes" on ascending grades to enable trucks and other slow moving vehicles to leave the main travel lanes, thereby facilitating passing and increasing highway capacity.

The Oregon state highway program, in detail:

North Carolina. As reported by W. H. Rogers, Jr., State Highway Engineer, estimated mileage and estimated cost of construction for 1952 as follows:

The reduced construction expenditures planned for 1953 are due to the nearing of completion of a $200,000,000 rural road construction program, financed by a bond issue. No new revenue sources are anticipated in 1953.

Mobley to Slag Association

Arthur B. Mobley has recently joined the staff of the National Slag Association as Engineer and Administrative Assistant. He will divide his time between work in the field on engineering problems and assisting the Managing Director, E. W. Bauman, in the headquarters office in Washington, D. C.

Following graduation from the University of Maryland, Mr. Mobley was

employed by the Maryland State Roads Commission, and recently had served as Materials Engineer for the Baltimore County Highway Department.

Louisiana plans 86-mile toll expressway project

Engineering contracts looking to the construction of a four-lane, 86-mile-long, toll highway which would appreciably shorten motor mileage between New Orleans and Lafayette, La., have been signed between five Louisiana parishes (counties) and the engineering firm of Palmer and Baker, Inc. Total cost of the highway is expected to be around $90,000,000. Announcement of the contract-signing was made by the five parishes affected—St. James, Iberville, St. Martin, Lafayette, Ascension.

The express highway, when completed, will cut approximately 46 miles from the present New Orleans-Lafayette route via U. S. 90, its sponsors report. The proposed toll road will begin at Lutcher, on the Airline Highway northwest of New Orleans, and continue as far as Lafayette.

Its construction through bayou country calls for the bridging of 17 navigable streams. The current plan is to cross the Mississippi at Donaldsonville. Other waterways to be crossed are the Atchafalaya River and Floodway and the Morganza Floodway.

Ten miles of four-lane trestle construction will be required for the proposed expressway, described as one of the most difficult and ambitious highway projects now planned for the Deep South. The expressway will have no intersections and will feature grade separations and interchanges.

Congress considering many bills affecting highways

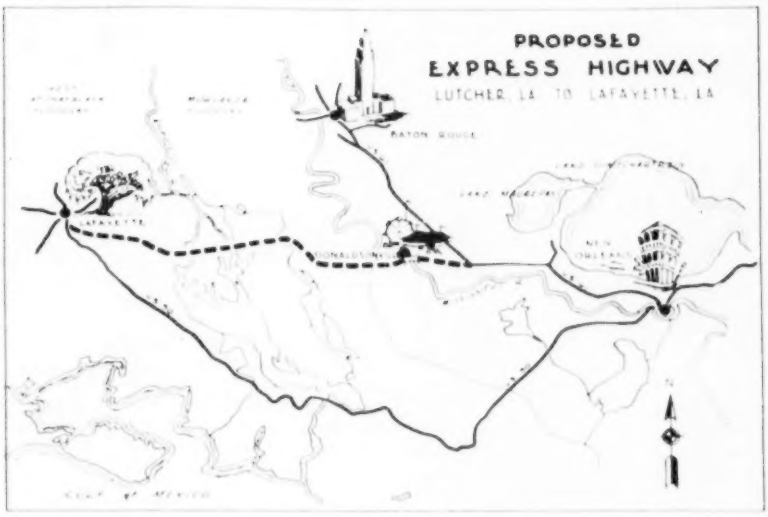
Before the 1953 year was more than a few days old the legislative hopper began to turn on bills and proposals what would affect road-building and highway transportation.

Bills to provide more highways include the following:

H.R. 7 (Dingell) would create a Federal Superhighway Authority to construct a system of north-south and east-west superhighways, empowered to issue $4,000,000,000 in bonds and to fix toll charges. To: Public Works.

H.R. 14 (Dempsey) and H. 1407 (Patten) increase Federal Aid for interstate highways $200,000,000 annually. To: Public Works.

H.R. 1799 (Andresen), H.R. 1807 (Chipperfield), H.R. 1866 (Whitten), H.R. 2296 (Price), H.R. 2475 (Withrow), S. 497 (Hennings), H.R. 1547 (Gregory), H.R. 1565 (Simpson of Ill.), and H.R. 373 (Bishop), each would provide for construction of a north-south highway generally paralleling the Mississippi River. To: Public Works.



★ The proposed expressway would cut across the Louisiana bayou country

H.R. 600 (Siemenski) authorizes an additional $200,000,000 for Defense Access roads. To: Public Works.

H.R. 1032 (Hand) establishes a National Superhighway Commission empowered to make plans and surveys for a system of superhighways and airports. To: Public Works.

H.R. 1614 (Wilson of California) and S. 283 (Kilgore) provide a transcontinental superhighway system using existing highways. Creates the Crozet Transcontinental Superhighway Commission empowered to collect tolls. To: Public Works.

Another proposal (S. 216) by Senators Magnus and Kilgore would authorize appropriation of the proceeds of all automotive excise taxes to be distributed to the states for highway purposes on the present 50-50 matching basis; distribution—45% for primary, 30% for secondary and 25% for urban primary roads. Referred to Public Works.

Numerous bills are under consideration on questions pertaining to taxation and regulation of trucks, motor vehicles and parts.

Ohio Contractors Association elects Richard H. Pierce

Richard H. Pierce, of Richard H. Pierce Construction Co., Toledo, was elected president of the Ohio Contractors Association, at the group's 34th annual meeting. Henry J. Fauber, of L. Walker Fauber Co., was elected vice-president.

At the annual meeting accident-prevention certificates were presented to A. J. Baltes, Inc., Norwalk; Christopher Construction Co., Columbus; Walter J. Elliott, McConnelsville; Maxon Construction Co., Dayton; C. F. Replogle, Circleville; and Elmer Vogt, Inc., Massilon.

Revised truck tax law passed in New York

Highway truckers in New York State will pay both registration fees and a ton-mile tax, under a revised law signed by Governor Dewey February 10. The truck owner will pay on the basis of the weight he states his truck is going to carry, rather than on the basis of what the state motor vehicle commissioner says his truck is capable of carrying. The new law gives the owner a chance to pay less than the maximum if his truck normally carries lightweight products.

Governor Dewey reversed his position on this law after strong pressure had developed to continue the "declared weight" basis, rather than "manufacturers' recommended weight," as a basis for the taxation.

In order to make up for the loss in highway revenue expected under the new law, the law broadens the effective scope of weight-distance tax to cover trucks of 18,000 lb. or more maximum loaded weight that operate only within cities, villages or public service commission zones. An amendment is planned to make enforcement of the weight-distance tax possible within New York City, correcting an oversight. Fines are increased from $50 to fines of $100 to $250 for first overweight offense, and from a former $100 to sums ranging from $250 to $500 for second offense.

• If all goes as planned, the 88-mile Turner Turnpike between Tulsa and Oklahoma City will be opened to traffic April 1. According to General Manager H. E. Bailey only one grading and drainage job remained incomplete and two paving projects had not been started as of the turn of the year. All the structural steel needs for the 66 bridges have been met.

EDITORIAL

Briefly Noted . . .

It is a peculiar state of affairs when an Association such as ARBA has to pass a resolution urging highway engineers to do the obvious. One of the resolutions solemnly voted at the Boston meeting called the attention of the highway departments to the availability of modern reflectorized signing practice, as a means of improving night time visibility and aiding night traffic. We might add that here is just one of many cases where there is a serious lag between research and practice, as well as in putting common sense know-how to work in the field of highway engineering.

* * *

Engineering students should learn standard practice, but they should also become "doubters" and learn to do some individual thinking. So said James W. Spencer, of Cornell University, speaking before the ARBA meeting in Boston. He feels that highway engineers should have a negative as well as a positive viewpoint. To encourage students in this respect, he suggests the use of investigative or extension work, in lieu of a final examination in highway engineering courses. Cornell students are encouraged to do this work in cooperation with town highway departments. Sounds like a fine idea, and one which might help pitch the student enthusiastically into highway work as a career.

* * *

The new Administration has made such a spirited beginning in inaugurating an era of economy in government that some people fear for the highway program.

Remember that practically every well planned highway project will rate high in "essentiality."

Remember that a carefully conceived roadbuilding program, even though involving box car cost figures, will spell itself out as a self-liquidating investment—largely repaying its cost through gasoline taxes from the traffic stream attracted to the roads; rewarding the public by savings in travel time and lessened vehicle operating costs; and providing bonuses in civic and economic advancement. The larger the road program the more profitable it will be to the public and the nation, up to a size of program that we certainly aren't in danger of reaching presently.

Roadbuilders can help by keeping their congressmen and legislators aware of the difference between "expenditure" and "economy" in the care of roads, and in keeping roadbuilding divorced from the PWA "public works" spending concept.

* * *

Prof. Ben Petty of Purdue, who knows how to get to the heart of a question with good Anglo-Saxon, made a good point at the Boston meeting. Appearing before the Contractors Division of ARBA, whose leaders are wrestling with the engineer scarcity question, he asked everyone to get after the politicians in some of the states. They still require the highway engineer candidate to be sponsored by a local committeeman. Imagine a fellow who has sweated it out for four years in college and perhaps done a stint in Korea, having to get the OK of some lousy ward heeler to get a highway job. We roughly quote the professor. You name the states.

* * *

What is our biggest highway public relations job? Vear Mann, of the Kentucky Department of Highways, thinks it is to sell politicians on the fact that their administration will profit by an unhampered operation of the road department. The voters must be convinced that the highway department is behind the public 8-ball, and that tampering with its affairs will endanger the vote. He notes that an astute politician once said, "Engineers want to build roads where they will serve the most people. The politicians want to build them where they will get the most votes. They are the same roads."

* * *

Thousands of old bridges today add up to a planning headache in the state, county and local highway departments. Many of them can be kept in service by a bit of tinkering. Usually the floor system is rusted, and replacing or strengthening it will, alone, add substantially to the safe load carrying capacity. Meanwhile, several hundred times a year, some bridge goes into the creek under a tractor or a trucker sneaking through with an overload.

* * *

"The earmarking of highway user taxes will not, of itself, solve the highway problem," notes L. Judson Morhouse of the New York Good Roads Association. Speaking particularly of the New York situation, he went on to say, "Revenues from gasoline taxes and motor vehicle registration fees will fall short of the amount necessary to meet highway needs."

This is a hard fact of life in virtually every state, and should be remembered by well meaning people who feel that by simply ending diversion the state's road problems can be solved.

Earmarking of funds is better than leaving each year's highway appropriation to the mercy of the legislative mood. But earmarking is a fragile thing. Speaking for no one state in particular, it is better to put through that constitutional anti-diversion amendment, as nearly half the states have done. Then go on from there to overhaul the entire legislative structure pertaining to highways, as achieved in Michigan and a few other states.

* * *

"Less than 5% of your auto costs go for state taxes," again to quote from a piece of publicity recently sent out by the New York Good Roads Association. This statement quotes figures from a survey showing that a relatively insignificant part of the cost of operating an automobile goes for the taxes which make roads possible. Annual operating costs of the average New York motorist exclusive of Federal taxes, are summarized as follows:

Gasoline and Oil	$189.82	22.53%
Tires	46.00	5.55%
Insurance	55.00	6.52%
Repairs, Washing, Greasing	68.00	8.07%
Depreciation	442.05	52.46%
Gasoline Tax	26.64	3.16%
License Fees	15.00	1.78%
Totals	$842.51	100.00%

"Good roads will substantially reduce the major costs of operating an automobile," this statement goes on to note.

IT COSTS LESS TO BUILD GOOD ROADS THAN TO HAVE POOR ROADS

Reversed Dozer Blade Finegrades Slope

CONTRACTORS on highway and other types of work involving the trimming of embankment slopes, and especially those on expressway work, will be interested in methods recently used by Peter Kiewit Sons Co., on a reservoir grading job at Salt Lake City.

The project was the construction of a 40 million-gallon reservoir which utilized a natural amphitheatre to minimize slope grading. The sides of the reservoir were sloped 4 to 1 and paved with concrete along with the flat bottom.

"Tiny" Madison, construction foreman for Kiewit, devised the money-saving idea of fine grading the embankment preliminary to paving, by means of a bulldozer anchored at the top of the slope. The first step was to place old mine car rails embedded in the slope with their surfaces set to finish grade, extending from top to bottom of the embankments in parallels spaced to the width of a bulldozer blade. Then he had the bulldozer blade assembly of a heavy tractor removed, the blade reversed, and the unit reassembled.

This enabled the bulldozer to pull, rather than to push, its load of dirt.

The bulldozer then plunged into its job. It chugged to the top of the embankment, lowered its blade onto the spaced rails, and backed downhill pulling its load of cut material. This worked like a charm except for the fact that the bulldozer had great difficulty in maintaing a straight course on its downhill trip.

To correct this trouble, "Tiny" ordered a dragline to the embankment top. Its cable was attached to the 'dozer. On the uphill trip the tractor ran free; but on the downhill journey with blade dropped, the counter-balancing pull of the dragline provided the balance needed to enable the bulldozer to move straight.

Thereafter, in the words of Supervising Engineer William F. (Fred) Gentry of the United States Bureau of Reclamation, the embankments were cut as smoothly and as rapidly "as if they were made of cheese."

Success of the idea was due in large measure to the fact that the soil was a sandy clay almost entirely free of rocks, which would have caused the bulldozer blade to jump from the guides. But even with the presence of rocks the idea seems to have some challenging possibilities for labor-saving.

★ Tractor with reversed dozer blade was used to "drag down" and finegrade the bank slope, preparatory to paving, aided by winch lines from the crane on the bank to hold dozer in place. Embeded mine car rails served as grading templates. (Photo U.S. Bureau of Reclamtion)

A.G.C. convention at Miami to draw 1400

With another peak volume of activity probable for the construction industry in 1953, general contractors attending the 34th annual convention of The Associated General Contractors of America in Miami, March 23-26, will focus their attention sharply on the twin task of carrying forward defense construction and an expanded program of cvilian projects.

More than 1,400 of the nation's leading contractors will attend the convention, whose program is being arranged to provide an opportunity to assess industry factors in the coming months. Over 80 per cent of the contract construction work in this country is performed annually by A.G.C.'s more than 6,200 member-firms, as well as a large volume of work overseas. The organization is the national trade association of general contractors of all types.

Convention speakers will include Walter Williams, Under-Secretary of Commerce; Carlton S. Proctor, past-president of the American Society of Civil Engineers; Major Gen. Samuel D. Sturgis, Jr., Acting Chief of Engineers for the Army; Rear Admiral J. F. Jelley, Chief, Bureau of Yards and Docks of the Navy; and Richard J. Gray, president of the Building and Construction Trades Department of the American Federation of Labor.

• Smoothness indices ranging from 5.6 to 13.1 inches (roughometer reading) per mile were reported by the California division of highways for portland cement concrete pavement placed in the 1951 calendar year. The average for all projects was 6.8 inches. Introduction of sawed construction of weakened-plane contraction joints was one innovation expected to improve riding qualities, already at a high peak of excellence.

The smoothest riding project was on Route 2 near Chaular, Calif.; Frederickson & Watson, contractor; R. H. Roberts, resident engineer; W. H. Melcher and R. W. Gainer, paving inspectors.

Road Builder's Meet at Boston

ARBA leaders consider Nation's highway needs and discuss wide range of technical problems at annual meeting

THE problems and policies of financing stepped-up roadbuilding programs, and many specialized technical and administrative topics, were discussed at Boston, where the American Road Builders Association held its 1953 annual meeting, February 9-11.

Representing one point of view, U. S. Senator Edward Martin (R. Penn.) told the delegates that the federal government should withdraw from the field of gasoline taxation as soon as possible, consistent with the needs of national defense. Senator Martin, who is chairman of the Senate Committee on Public Works, said, "I believe that a great measure of relief could be obtained by stopping the diversion of all road user taxes and by financing the construction of through roads and bridges by means of tolls." We would have more effective administration and operation of our highway program if it were more directly under state control, he said.

Senator Martin noted that federal highway aid represents only about two-thirds of the proceeds of the 2-cent federal gasoline tax.

Toll road and bridge receipts totaled $155 million in 1951, $187 million in 1952, and will increase sharply in 1953. Today 23 states have some type of toll road legislation, and it is expected that about 2,000 miles of toll roads will be in operation within the next two years.

Federal Aid to Continue

In contrast with Senator Martin's vigorous stand against further taxation or borrowing to build roads, Congressman George H. Fallon, of Maryland, declared that piece-meal, pay-as-you-go approaches to the road problem will not suffice to correct the very great highway deficiencies. He reminded that the reduction in federal construction expenditures announced by the new Administration will not mean curtailment of Federal aid to highways as now authorized by congress.

Congressman Fallon advocated a careful evaluation of road needs by the states as well as by the federal government, and urged a coordinated long range program. In his opinion it will take 10 to 12 years to bring the highway system up to standard. Practically all highway projects will meet the requirements of essentiality, he said.

The importance of the main road network in national defense was stressed by another speaker, Brig. Gen. Paul F. Yount, Deputy Chief of Transportation. He urged that the 40,000-mile National System of Interstate Highways be built up to the highest practical uniform standard, in both urban and rural sections. Special attention to limited access or controlled access designs should be given on these routes, where necessary to insure effective movement of traffic in the interest of national defense.

★ Samuel C. Hadden, Chairman, Indiana State Highway Commission, was given the George Bartlett Award. Presented to Mr. Hadden at the Boston meeting of ARBA, this award is one given annaully for distinguished service in highway advancement

★ ARBA President-elect Robert M. Reindollar

Ziegler Decries Diversion

Another speaker to hit out at federal policies was Charles M. Ziegler, Michigan highway commissioner and President of the American Association of State Highway Officials. Mr. Ziegler warned that the federal government must cease diverting federal highway user revenues, or the national highway system can never be put in shape. "The highways have become a part of the assembly lines producing war material, ammunition, planes, tanks and heavy moving equipment, and the United States is the arsenal of world democracy." These highways which are necessary to move food supplies and troops must not be sacrificed in a misguided zeal which over-emphasizes mass production to the detriment of other needs necessary to victory in the event of war, he said.

Mr. Ziegler, opposing Senator Martin's views, recommended that federal highway aid be increased to an amount not less than the full sum collected as a federal tax on gasoline. This would mean raising the present $500 million annual federal aid to at least $800 million. Federally collected gasoline tax on gasoline, oil, and excise taxes on cars, tires and parts during the 1952 calendar year, together totaled over $1,800 million.

Mr. Ziegler also reminded that the state diversion situation is still serious. Diversion of highway user revenues to non-highway purposes by the states reached an all-time dollar high in 1951, when 26 states diverted $267 million, despite the fact that many states (21 at the present time) now have adopted anti-diversion amendments.

The Engineer Shortage

Both the Educational and the Contractors divisions of ARBA gave attention to the shortage of highway engineers at the Boston Meeting. Speaking for the educational group, C. R. Hanes, Ohio Department of Highways, noted that there is no chance for the supply of graduating engineers to meet demands before 1965. Recent graduates have had from 4 to 15 offers of jobs on leaving school. Low salaries paid by the highway organizations, plus the Korean war, have created the present impasse.

Personnel problems in the highway departments were discussed by James A. Anderson, Commissioner of Highways, Virginia. He predicted that the highway departments will solve their problems by securing better pay scales from the legislatures, and by

Reindollar Heads ARBA for 1953

Robert M. Reindollar, formerly Chairman of the Maryland State Roads Commission, and now a consulting engineer, Baltimore, was elected president of the American Road Builders for 1953. Other election results at the Boston meeting were as follows:

Vice Presidents: Charles M. Noble, Chief Engineer, New Jersey Turnpike Authority; W. G. Pruett, Director, Alabama State Highway Department; Julien R. Steelman, President, Koehring Co.; Harmer E. Davis, Director, Institute of Transportation and Traffic Engineering, University of California.

Treasurer: (Re-elected) Jennings Randolph, Assistant to the President, Capitol Airlines, Inc.

Directors: H. L. Aitken, State Engineer, Bureau of Highways, Nebraska Department of Roads and Irrigation; J. L. Cohill, Assistant to the President, Firestone Tire & Rubber Co.; Ben T. Collier, State Aid Engineer, Mississippi State Highway Department; Troy M. Deal, Sr., Square Deal Machinery & Supply Co., Orlando, Fla.; A. T. Goldbeck, Engineer-Director, National Crushed Stone Association; L. W. Lamb, Contractor, Holland, Mich.; Frederick Salditt, Vice President, Harnischfeger Corporation.

Contractors Division

President: S. Howard Brown, of Brown, Davis & White, Lebanon, Pa.

Vice Presidents: John P. Moss, Moss-Thornton Construction Co., Leeds, Ala., and L. W. Lamb, Holland, Mich.

Directors (1956): Paul L. Andrews, Executive Secretary, Georgia Highway Contractors Association; C. J. Carroll, Executive Secretary, Michigan Road Builders Association; D. R. Hines, Secretary-Treasurer, Tennessee Road Builders Association; Taylor G. Soper, Executive Secretary, Illinois Road Builders Association; Gordon E. Gaffney, Executive Secretary, New England Road Builders Association; Rudolph Kraemer, Edward Kraemer & Sons, Plain, Wis.; John R. Phillips, The Macasphalt Corporation, Lakeland, Fla.; Francis J. Butler, Grand Forks, N. D.

Directors (1954): William Nanini, President, Rock Road Construction Co., Chicago; J. B. Michael, J. B. Michael and Company, Memphis, Tenn.; Herbert M. Warren, Warren Brothers Roads Company, Birmingham, Ala.; J. W. Thompson, Greensboro, N. C.; R. W. Hyde, Jr., Hyde Construction Company, Jackson, Miss.; Philip V. Corey, Portland, Me.; Harry Waugh, T. L. James and Company, Inc., Ruston, La.

Municipal and Airport Division

President: Gen. Donald H. Connolly, Director, Department of Aviation, Friendship International Airport, Baltimore, Md.

Vice Presidents: John M. Kyle, Chief Engineer, The Port of New York Authority, New York City; Soule Butler, City Engineer, Alexander, La.; T. J. Montgomery, City Engineer, Cincinnati, O.; Frank W. Wiley, Director, Montana Aeronautics Commission, Helena.

Directors: J. N. Robertson, Director of Highways, District of Columbia; E. E. Bentley, Engineer-Manager of Airports, Jacksonville, Fla.; J. E. Maring,* City Engineer, Kansas City, Mo.; Willard S. Pratt, Director of Public Works, Newton Center, Mass.; C. W. Cooke, Director of Public Works, Hartford, Conn.; J. S. Devlin, Director, Department of Public Works, Pittsburgh, Pa.; W. P. Tarbell, City Engineer, Fargo, N. D.

County and Local Roads Division

President: George Deibler, County Highway Engineer, St. Louis County, Duluth, Minn.

Vice Presidents: Levi B. Duff, Director, Allegheny County Department of Works, Pittsburgh, Pa.; Manton Hannah, County Highway Engineer, McLennon County, Waco, Tex.; O. Carson Barklow, President, Ohio County Engineers' Association, Portsmouth, O.; H. O. Walberg, County Road Engineer, Skagit County, Mt. Vernon, Wash.

Directors: E. L. Mount, County Engineer, Mercer County, Trenton, N. J.; Paul A. Hartwig, Commissioner LaCrosse County Highway Department, LaCrosse, Wis.; Lewis A. Lush, County Superintendent of Highways, Sangamon County, Springfield, Ill.; C. J. Rogers, County Engineer, Jefferson County, Birmingham, Ala.; Lee B. Brandon, County Engineer, Lauderdale County, Meridian, Miss.; Nelson W. Hall, County Superintendent of Highways, Rockland County, New City, N. Y.; Wally M. Hector, County Engineer, Douglas County, Roseburg, Ore.; Allan Williams, Engineer-Superintendent, Ionia County, Ionia, Mich.

*Died following nomination. Post to remain vacant temporarily.

Manufacturers Division

(Construction Industry Manufacturers Association)

The following were elected as officers for 1953: President, Harold T. Reishus, General Manager, Industrial Power Division, International Harvester Co., Melrose Park, Ill.; First Vice President, Ray McLean, President, Jaeger Machine Company, Columbus, O.; Second Vice President, L. G. Schraub, Vice President, Union Wire Rope Construction, Kansas City, Mo.; Secretary-Treasurer, Roy E. McCluskey, Vice President, R. G. LeTourneau, Inc., Peoria, Ill. Harold F. Hess continues as Executive Vice President.

The new directors for the term ending in 1956 will be: E. Bentley, Sales Manager, Detroit Diesel Engine Division, General Motors Corporation, Detroit, Mich.; P. H. Birckhead, Vice President, Bucyrus-Erie Company, South Milwaukee, Wis.; A. A. Levison, Vice President and General Sales Manager, Blaw-Knox Equipment Division, Blaw-Knox Company, Pittsburgh, Pa.; Roy McLean, President, Jaeger Machine Company, Columbus, O.; Robert Myers, Director Market Development, United States Steel Corporation, Pittsburgh, Pa. (releasing Robert Ritchey for the term ending in 1955); Melvin Obestrud, President, Pioneer Engineering Works, Minneapolis, Minn.; Luke E. Smith, President, "Quickway" Truck Shovel Company, Denver, Colo.; W. White, Sr., President, White Manufacturing Company, Elkhart, Ind.

Pan American Division

Ing. Tomas Guardia of Panama City, Panama, succeeds Dr. Carlos Carbonell of Caracas, Venezuela, as president.

Materials and Supplies Division

George H. Kimber, Calcium Chloride Institute, Washington, D. C., 1952 president, continues in that capacity in 1953.

Educational Division

Prof. Ben H. Petty, Department of Civil Engineering, Purdue University, Lafayette, Ind., succeeds himself as president of the Educational Division.

The 1954 convention of the American Road Builders' Association will be held in Atlantic City, N. J.

ARBA Resolutions Cover Many Topics

Resolutions adopted by the ARBA general assembly at the Boston meeting included the following:

- Federal income tax laws pertaining to urban property owners' payment of street assessments should be clarified. Present laws discriminate against property owner.
- Civil Aeronautics Administration should be ordered by Congress to find out what sum is needed to meet civil airport construction needs on a continuing basis, under the Federal Airport Act of 1946, and sufficient funds should be appropriated to carry out intent of the act.
- State highway departments are urged to award to contract such highway maintenance work as aggregate production, bituminous surface treatment, furnishing and applying of bituminous plant mixes, bridge repairs and painting, and other work which might lend itself to the contract method.
- The ARBA endorses the Contractors Division highway educational program, and urges that all divisions of ARBA cooperate toward making this program successful.
- A study is urged of federal laws and policies which now prohibit the use of federal funds for publicly-owned toll roads, with a view of liberalization.
- Congress is urged to authorize a minimum of $1¼ billion for federal highway aid during the next biennium.
- ARBA endorses and lauds the road promotion programs currently being carried out by American industry.
- The Hearst publications are cited and commended for their vigorous newspaper, magazine, radio and television campaign for better roads.
- The highway departments are urged to place greater emphasis on night time visibility and make more complete use of such devices as improved signs, reflectorization, etc.

training programs in cooperation with engineering schools. One suggestion is a 5-year training period during which the student will work 3 months each year on various highway jobs, and at the end will have a B.S. degree and 2 years' experience and indoctrination into highway work. Short courses are being given in many highway departments for inspectors, surveyors, equipment operators and other sub-professional or non-professional employees, whose skillful utilization can help offset the shortage of engineers.

The Contractors Division of ARBA, collectively and through its chapters, has inaugurated a program to help interest high school and college men in highway engineering careers. As described by A. E. O'Brien of The Associated Pennsylvania Constructors, this effort is to include such items as scholarships financed by local contractor associations, on-job training of students, working for contractors in summer, training of non-professional employees, public support of highway department effort to secure better salaries, etc.

Soils Meeting

One of the best technical sessions of the Boston meeting was the evening Soils session, with Earle Bennett, Koppers Co., presiding. Developments in soil-bituminous stabilization in the Southwest were told by James C. Johnson, Asphalt Institute, Oklahoma City. This type of stabilization is particularly useful in arid regions poor in aggregates. Over 1,000 miles of such construction has been built in Oklahoma; also a large mileage in Kansas. The standard methods of laboratory analysis (Hubbard-Field, Hveem, Triaxial, Marshall) can be used. Various types of mixing equipment have been successful on soil-bituminous work, which requires a good base and drainage.

Use of emulsified asphalt with locally available sand, marl and shell was described by C. A. Peterson, Director of Public Works, Pinellas County, Fla. He told of a familiar situation of greatly increased traffic plus lack of good quality aggregates within close shipping distances. The county has evolved methods which utilize various combinations of locally available materials, such as sand-asphalt, sand plus fresh water shell plus asphalt, marl-asphalt, marl plus oyster shell plus crushed limestone (imported), all with surface treatment. County road base and treatment costs have ranged from $1.15 to $1.35 per square yard.

Improved methods of fill compaction at bridges were outlined by Philip Keene, Engineer of Soils and Foundations, Connecticut State Highway Department. The problem has been complicated by the inability of construction equipment such as tractors and scrapers to compact the 2-foot strip immediately next to the bridge abutment in making the turnaround, by the lack of an effective means of measuring the compaction of the course granular material often used, and by other factors. He stressed the importance of having a well graded granular material in prism formation back of abutments, and of compacting next to abutments with gasoline or electric powered rammers. The usual pneumatic "jumping" tamper is not adequate here, in this speaker's opinion.

Cornell University's program of research in local road methods, in cooperation with New York town engineers, was described by James W. Spencer, Highway Research and Extension Engineering, Cornell University, Ithaca. A test road embodying sections stabilized by various methods is being traffic-tested. The project is attracting the interest and cooperation of town engineers, who are thus being stimulated to new thinking in the solution of their low cost road problems.

Other papers given in this session included a summary of soil-cement experience in Camden County, New Jersey, by Albert G. Wise, Assistant County Engineer; soil compaction practices in New York State, by N. M. Sinicori, Associate Soils Engineer, N. Y. State Department of Public Works; lime-fly ash stabilization research in Maryland, by J. E. Woods, Materials Engineer.

City Congestion Problem

Wilfred Owen, Institute of Urban Studies, University of Pennsylvania, was one of several speakers on urban, expressway and other metropolitan problems. In discussing transportation problems in urban areas, Mr. Owen raised the question as to whether modern urban expressways will really solve the congestion problem. Titling his talk, "The Stange Case of the Stangled City," he called for basic research in city patterns. The advantage of city living, he pointed out, is that people can live near where they work. But the short working hours we enjoy today are nullified by the long time required to get to and from work due to congestion. No group is happy in city life. Transit companies, despite large patronage, are sick financially. Truckers are forced to creep through narrow streets to reach scattered, congested terminals. Downtown merchants are seeing the trek of retail business to the suburbs.

Witnesses who have come before Mr. Owens in his recent research testify that the American city will continue to strangle until a way is found to cut down on population density.

(Continued on page 96)

Tunneling Through a Canyon Wall

How faulted, shattered rock was bored through by Rhoades-Shofner Construction Company at Gaviota George, where a tunnel was necessary to avoid a deep cut and long disposal haul and to preserve a famous landmark

By John E. Witte

Resident Engineer, California Division of Highways, San Luis Obispo

DURING the present winter the finishing touches are being put on a tunnel which is of interest as a solution to a roadway design problem, as well as for the construction methods used.

This project is the Gaviota Gorge Tunnel on U.S. Route 101 in Santa Barbara County, California. It is one of a series of contracts to provide a limited access freeway northward from Gaviota to a point beyond Nojoqui Summit, 8.3 miles. This $3,300,000 undertaking, in progress since 1950, is due to be completed late in 1953.

The major part of the realignment (see map) lies on the east side of Gaviota Canyon, traversing the Santa Ynez range. This range was the result of an uplift along the Santa Ynez fault which crosses the new road at the summit. Gaviota Canyon leading to the sea has its steepest walls at a point known as Gaviota Gorge.

Design Alternatives

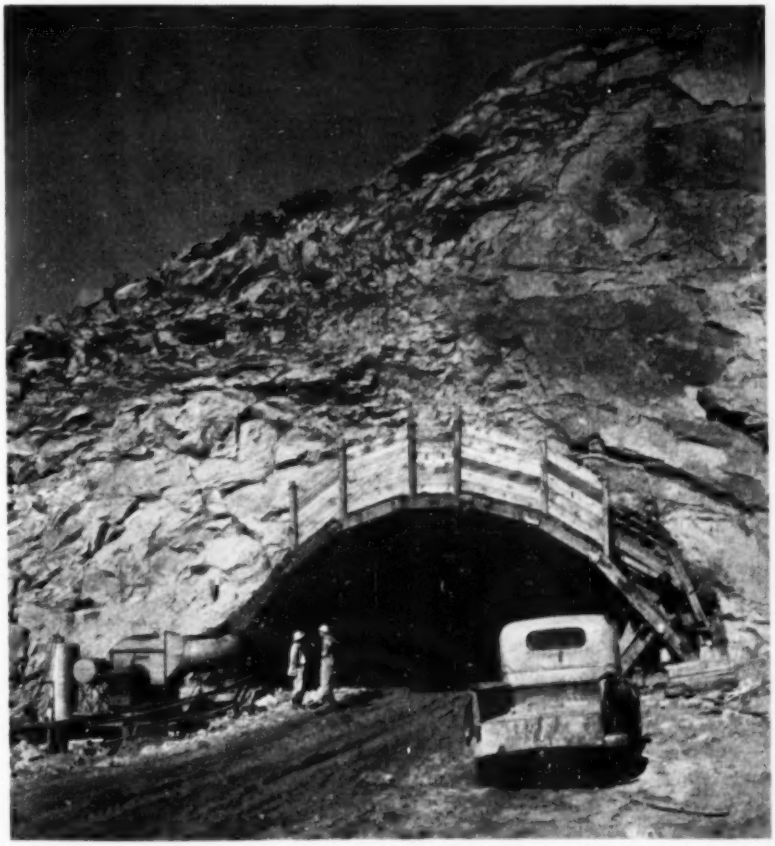
In order to provide for a four-lane limited access freeway through the narrow gorge it became necessary to choose between two methods of providing the required roadway areas. One was to construct an open cut through the east side of the gorge. This posed two problems, the first being that of removing 250,000 cu.yd. of rock for which there was not sufficient waste site within limits of economical haul. The second problem was that of preserving the face of the gorge; a cut here would destroy not only the rugged beauty, but also a historic landmark.*

The second alternative was to drive a tunnel through the eastern flank of the gorge. This method would meet the above objections and also provide the most economical route; hence a tunnel was decided on for the northbound expressway roadway.

A contract was entered into with the Rhoades-Shofner Construction Company, Inc., of Los Angeles on July 2, 1951, for construction of a concrete-lined tunnel 435 ft. long, and grading and paving of 0.1 mile of roadway.

The first stage of construction required the establishment of a working face at the south portal site from which to begin the tunneling. In order to establish this face it was necessary to construct a through cut which required the removal of 8,000 cu.yd. of weathered sandstone.

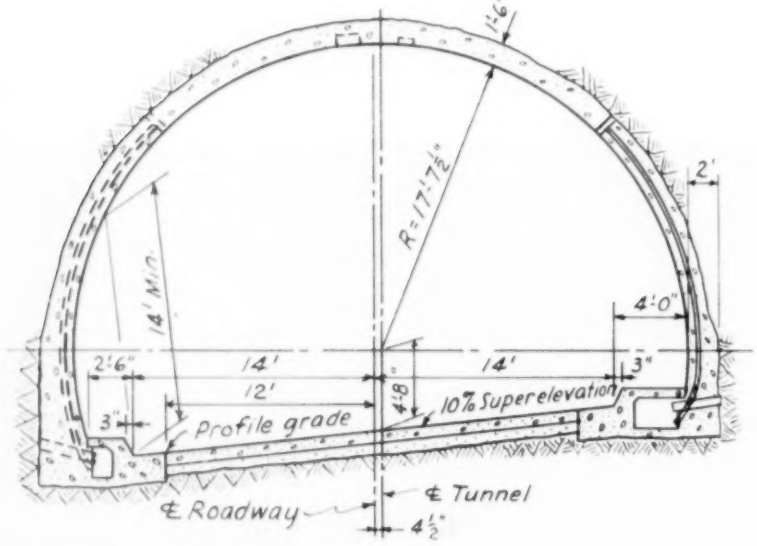
Because of close proximity to the traveled way, construction work on the through cut required a method which would minimize the delay to heavy summertime traffic due to blasting. The method used involved the construction of a series of five benches of a size to control the amount of material removed during blasting and excavating procedures. The construction of a typical bench was accomplished by drilling 198 holes, averaging 16 ft. in depth, with Ingersoll-Rand J-50 jackhammers. The holes were loaded with Atlas



★ South portal showing completed heading section. Blower for removing powder fumes shown at left. Timber bulkhead above portal is to shield workers and equipment from falling rocks

*Here on Christmas Day, in 1846, natives and soldiers from the Presidio of Santa Barbara lay in ambush for Lt. Col. John C. Fremont and his battalion, who were marching south to engage the California forces in the deciding battle of the Mexican War. Advised of the plot, Fremont flanked the adversaries by another route and went on to capture Santa Barbara and assist in the fall of Los Angeles to the American Army.

★ South portal showing timbered left and right wall plate drifts. Unstable rock above the right drift necessitated construction of two over-size square sets



★ Cross-section of completed concrete lined tunnel

40% dynamite at the rate of 0.75 lb. per cu.yd. of rock to be removed, and the charge was set off with Atlas Rockmaster electric detonators by use of a 115-volt blasting circuit. The broken material was bulldozed down to the roadway level, loaded into Euclid rear-dumps with a Lorain (77) 1½-yd. shovel, and hauled to one of the two embankment areas south of the tunnel site. In order to prevent conflict with highway traffic the contractor built a 20-ft. haul road parallel to the existing highway between the two fill areas.

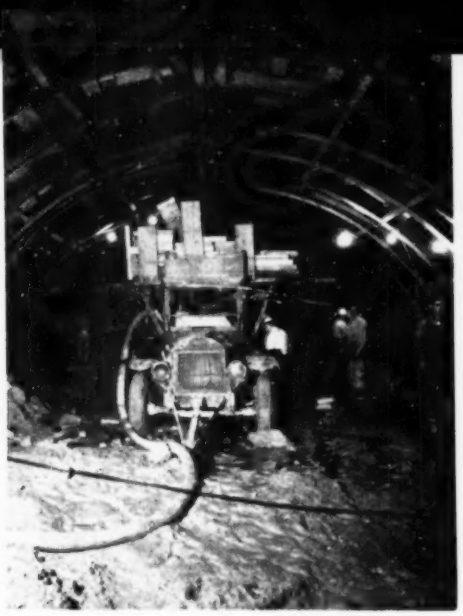
In connection with removal of material from the south portal cut, studies were made to determine the stability of the formations which might be met at the face. A fault zone encountered directly above the portal indicated that the sandstone layers had been subjected to considerable movement, leaving little cohesion between the blocky, unstable layers.

Rock Slippage Problem

During the excavation of this portal cut, cracks began showing in the face of the newly exposed rock to the right above the planned portal. When clay seams between the steeply bedded sandstone layers allowed slippage to take place, cross-bedding became evident throughout the right side of the portal face. This movement was further accelerated by air slacking of the exposed rock surface. Since this unstable rock face constituted a hazard to workmen, equipment and future traffic, an additional 3,000 cu.yd. of material was removed from above the south portal.

Geological data indicated that the tunnel was to be driven through the middle member of the Gaviota formation, consisting of fine to medium grained concretionary sandstone, bedded in layers varying in thickness from a few inches to several feet. In the vicinity of Gaviota Gorge the faulting is governed by the south branch of the Santa Ynez fault and lesser faults associated with it which

★ (Left): Nine-segment timber tunnel support in heading section. Steel supports shown in background. Thirty-inch blower line seen at left. (Right): Transition from timber to steel tunnel supports. Drill jumbo shown in background



★ Drill jumbo at work. Miner at left is setting up to drill left wall plate drift

★ South portal of tunnel with completed bore. South bound roadway in open cut appears at the left

constitute an active fault system of a magnitude sufficient to cause the rock structure along the tunnel line to be shattered, blocky, seamed and fissured.

With this information in mind and from studies of the formations encountered during the excavation of the portal cut, it was decided that the tunnel could be driven with less difficulty and with greater safety by use of the heading and bench method of tunnel excavation. The choice of this method was based upon the knowledge that the rock to be encountered during the driving of the tunnel would be of an unstable nature, and would in all probability require the use of tunnel supports for at least the first 120 ft.

The heading and bench method provides for the removal of the heading from the crown to the spring line, as the first excavation cycle, and the removal of the bench from the spring line to the floor as the second excavation cycle. The method offers the advantage of providing the bench as a convenient work platform for the placing of the arch supports, while allowing the mucking to proceed simultaneously. Due to the fact that steel products were not readily available, mine grade timber was used for tunnel supports.

The tunnel bore is semi-circular above the spring line, with the sides continuing in an arc until they intersect sidewalks located 9 in. above the concrete pavement. The pavement is on a 10% superelevation. The heading and bench method required that the upper 15 ft. height of the bore, which is the heading, first be removed for the entire length of the tunnel after which the lower 10 ft., the bench, was removed, thus completing the planned section.

The south portal heading was established by driving two wall-plate drifts 24 ft. in depth, for the purpose of placing 12" x 12" timber wall plates to serve as a base for the timber tunnel supports.

Actual construction of the tunnel bore was begun on November 3, 1951, in the left wall plate drift. The drifts were 5 ft. wide at the top, 7 ft. wide at the base, and 7 ft. high, with the outer edges 20 ft. from the tunnel centerline.

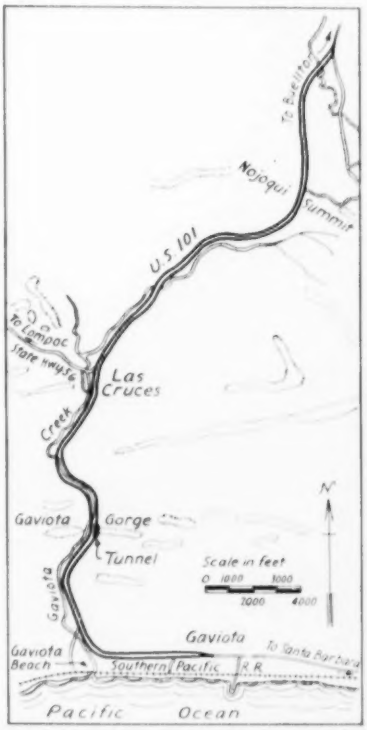
To support the unstable sandstone during the driving of the wall plate drifts, temporary timber sets were installed consisting of 8" x 8" posts and 3" x 12" lagging. Alternation of drilling and shooting with "muck" removal facilitated simultaneous work on the two drifts. With the removal of the natural support in the right drift, cracks developed over the portal, requiring installation of two oversize square timber sets at the entrance to the portal.

Curve Complicated Job

After the wall plate drifts were advanced to a depth of approximately 24 ft., provision was made to install the permanent 12" x 12" timber wall plates; however, some difficulty was encountered due to the tunnel being on a 1200-ft. radius curve to the left.

The two wall plate drifts were connected by driving a stope along the periphery of the tunnel arch in order that two 9-segment timber arch sets could be installed. The removal of the remaining arch material back to the south portal was carried on from the south face of the stope, which was removed in 4-ft. rounds. This procedure was followed until only 4 ft. of rock wall remained between the north face of the stope and the outside face of the portal. In order to prevent the unstable face rock from being displaced, holes of a size approximately 2 ft. square were shot through the remaining wall. 8" x 8" timber crown bars at 3-ft. centers were extended through from the sets previously placed to a point beyond the portal face. After the crown bars were placed and blocked, the Number 1 timber arch was placed at the south portal. With the removal of the core material below the timber arch sets to the level of the wall plates, the south portal was established and the driving of the heading was begun..

Advancement of the heading was accomplished by driving the wall plate drifts on either side ahead of the core and placing the nine segment timber arch as the excavation progressed. These drifts were of the same size as that of the portal drifts, but did not require the use of timber sets,



★ How the limited access reconstruction of U.S. 101 parallels Gaviota Creek as it rises from the coast

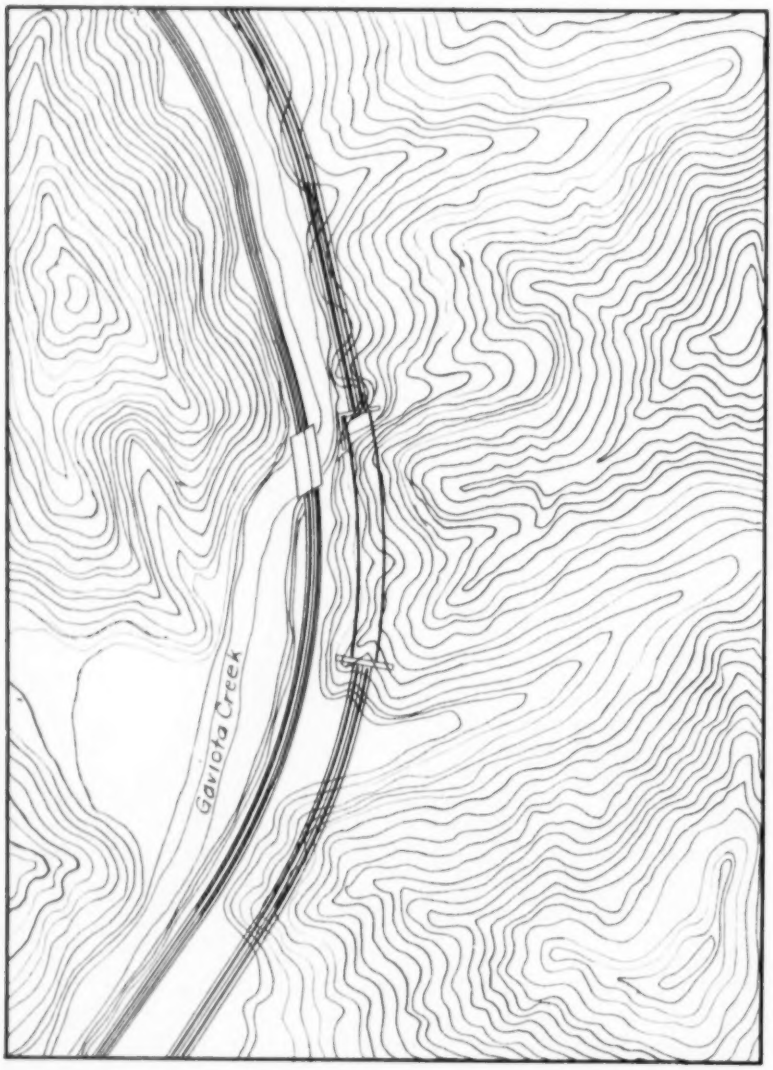
as the unweathered sandstone possessed more stability. The material in the drifts was drilled, shot, and then removed from the heading by means of a Pacific slusher operated from an Ingersoll-Rand air tugger.

Main Heading Advance

The main heading, cross section area about 400 sq.ft., was advanced in 5-ft. rounds by drilling with 5 Ingersoll-Rand pneumatically operated drills mounted on a jumbo. Three drills were operated from a cross bar on the bottom deck while two drills, mounted on Chicago Pneumatic jibs, worked off the top deck. The number of holes in the heading round varied from 60 to 120, depending on the condition of the rock. Depending upon the amount of overbreak and the fragmentation of the material affecting the efficiency of the mucking operation, the average progress varied from 5 to 10 ft. per day.

Blasting fumes and fouled air were removed from the tunnel heading with a 25,000-cfm. Sirocco No. 6 turbine blower. An average round resulted in 80 cu.yd. of rock being removed from the face of the heading, which was loaded into dump trucks by means of an Eimco 1½-yd. rocker shovel and hauled to the embankment areas. Upon completion of the mucking operation, the nine segment arch was erected.

The timber sets were tied together with 6" x 8" collar braces and ¾-in. tie bolts to provide a stable support. The tie bolts will remain to replace reinforcing steel in the concrete arch lining, while the collar braces will be removed prior to the lining operation.



★ Contour map showing road and tunnel location through Gaviota Gage.
Tunnel length 435 ft.
Contour interval 40 ft.

Change to Steel

After the heading was advanced about 120 ft. the formation encountered indicated the tunnel would require supports throughout. In order to decrease the amount of excavation and the time required for placing of the supports, it was decided to take advantage of a supply of 10" x 10" (42-lb.) steel "H" bearing piles made available by the Bridge Department of the California Division of Highways. Instead of the nine segment timber arch sections used in the first 120 ft., the steel arch sections were fabricated in two segments, each 25 ft. in length along the arch.

Driving of the tunnel continued in the above described manner, with the wall plate drifts being advanced ahead of the main heading for the purpose of placing the new steel wall plates. The bottom flange of the steel arch sections was bolted to the steel wall plates, as were the two segments at the crown of the tunnel.

The use of steel instead of timber supports resulted in substantial saving of tunnel excavation and lining, due to the fact that the steel could be incorporated in the concrete lined section whereas the timber sets were placed outside of the lined area. Erection of the steel sets on 5-ft. centers could be accomplished in about half the time compared with timber sets on 4-ft. centers.

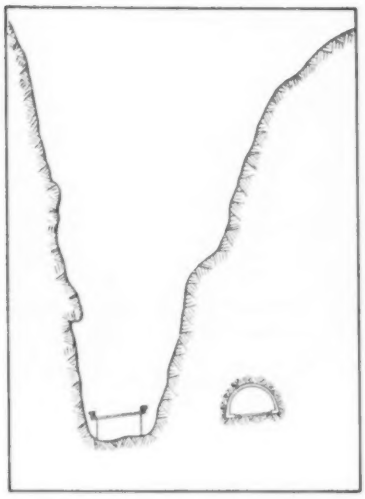
Driving of the tunnel was completed for the timber and steel supported sections in much the same manner. For the entire length of the heading (385 ft. from this portal), three locations were encountered where the formation was sufficiently stable to permit elimination of the wall plate drifts for a combined distance of 83 ft. Lagging timber totalled 200,000 bd. ft. Twenty thousand wedges were used in the construction.

On February 6, 1952, the left drift was "holed through," duly celebrated by the traditional party.

The fact that the tunnel bore intersects the north portal face at a 30° angle necessitated the erection of the steel supports in a fan pattern. The supports are secured to the wall plates at 1 ft. centers on the left and 5 ft. centers on the right, an arrangement requiring the use of fillets or "dutchmen" to span the greater distance between the individual arch segments.

Bench Removal

The bench section was removed in three operations. The center of the bench for a width of 26 ft. was excavated for the entire length of the tunnel, while the two remaining side benches were removed in 5 to 10 ft. sections so that the plumb posts could be placed under the wall plates. The central bench section was removed by drilling vertical holes at 4 ft. centers, blasting, and removing the material as before. Air for the pneumatic equipment was supplied through 4-in.



Cross-section of gorge near north portal of tunnel. This section also cuts bridge over Gaviota Creek

Armco Rainmaker pipe by one Gardner-Denver 500-cfm. and two Ingersoll-Rand 500-cfm. compressors operating at 100-psi. pressure. Electricity was supplied by one Caterpillar 25-kw. and one LeRoi 25-kw. generator. Water for the drilling was supplied from an artesian well 600 ft. deep located at the south portal.

The typical crew for both heading and bench shifts consisted of 1 walking boss, 1 shifter, 5 miners, 5 chucktenders, 1 tool nipper, 1 mucking machine operator, 2 dump truck operators, 1 compressor operator, and 1 light plant operator.

The day shift was augmented by a tunnel superintendent, 1 powder man, 2 timbermen, 1 bulldozer operator, and a bull gang consisting of a foreman and three laborers. Tunneling was conducted around the clock, 6 days per week between November 3, 1951, and March 5, 1952, then reduced to two and finally one shift.

The completed tunnel will accommodate two traffic lanes 12 ft. in width with combination sidewalks, curbs and gutters. The tunnel lining will be 18 in. thick in the cut and cover sections, 36 in. in the timber supported section and 24 in. in the steel supported section.

To provide for drainage of the tunnel arch, 3-in. steel tubing arch weepers are encased in the lining at 32-ft. centers and 6-in. perforated pipes are encased in the footing blocks at 16-ft. centers. The subsurface drainage which percolates from the tunnel invert will be drained off through a 6-in. layer of pervious base material placed below the 10-in. concrete pavement. All drainage will discharge into drain galleries situated below sidewalks.

The portal structures are to be constructed of reinforced concrete. The exposed surfaces of the portal structures are to formed with rough form lumber in contact with the concrete and with recess stripping to produce a concrete surface with the appearance of large sandstone blocks. The exposed surfaces of the portal structures will also be stained various shades of buff to provide a blending of the structure with the surrounding sandstone formations.

Transformer and magnetic contactor vaults and lighting fixture pull boxes are to be imbeded in the tunnel lining to provide for the installation of the tunnel lighting system which will be done under a separate contract.

Rhoades-Shofner Construction Company has been represented by A. A. Mathews, Chief Engineer, and W. A. Ripley, Project Superintendent. The job is under the Division of Highways, District V; E. J. L. Peterson, District Engineer, with C. I. Brown, Assistant District Engineer (Operations). The author served as Resident Engineer under the supervision of George T. McCoy, Jr., District Construction Engineer.

Side plates give oversize bucket capacity for easy digging materials

The accompanying pictures show how Grandview Construction Company temporarily built up the capacity of a 2-yard bucket for a fast loading project involving soft easily-dug materials.

The job was a sub-contract in connection with the New Jersey Turnpike grading work two years ago. The soil was extremely easy to scoop up. Although no data are available on the production, the R&S editor was told that these extension plates worked perfectly in this case, neither overloading the shovel nor greatly slowing up its loading cycle in this particular material. The plates were easily removed when the job was through for return to normal digging materials.

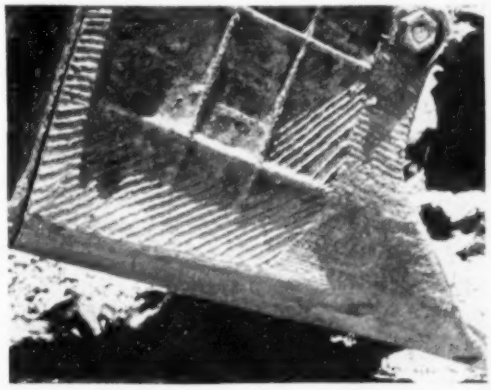
Snow banks sliced for easier clearance

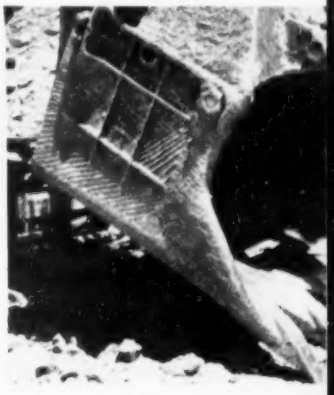
In Minnesota state highway work, the first clearance of snow from the surface and shoulders is in accordance with conventional methods by using a one-way plow and wing, according to notes received by the Bureau of Public Roads. After clearing a deep snow or a series of snows, the vertical bank of snow at or near each shoulder line forestalls further snow removal. To provide for additional storage space for the conventional removal operations, this vertical bank must be removed. Heretofore the removal has been generally accomplished by a rotary snow plow, the operation simply shifting the vertical face outward enough to provide for more storage.

The State has improved this procedure by blading snow inwardly from the vertical bank with a motor grader provided with a long blade (and a wing at times). This pulls snow from the vertical bank onto the road shoulder. The large windrow of snow can then be more easily and rapidly removed by the rotary plow because of the improved traction. Also the hazard connected with the rotor operation at the top of steep fill and ditch slopes is mostly removed.

Other advantages in this method are the increased forward speed of the rotary plow operating in the windrowed snow to an average of 6 mph. The snow being loose and readily available, more snow is actually moved out by the rotary plow and the storage space obtained is larger. The cross-section resulting is more streamlined which promotes self-clearance of snow and retards drifting. Finally, a ditch is formed at or near the actual ditch line which carries most of the water from thawing snow longitudinally along the road to designated outlets.

Appointed Madsen Sales Manager. Glenn F. Worthington has been appointed sales manager of Madsen Iron Works, Inc., Huntington Park, Calif. He came with the company in 1945 and has been engaged in the sales department since that time.





★ Built-up dipper on Northwest shovel greatly increased daily yardages on the New Jersey Turnpike job

★ 1953 Board of Directors of Associated Equipment Distributors

2800 Attend Record AED Meeting

Business looks good, delegates told, as they discussed problems ranging from contractor financing to personnel training

THE vigor and progressiveness of the construction equipment distributor business were underscored by the recent meeting in Chicago, where 2,800 American and Canadian distributor and manufacturer representatives met February 1-5 at the Conrad Hilton.

In addition to meetings devoted to internal business problems, the delegates found time to hear ideas on a number of problems of wide interest to the contractor and engineer readers of Roads and Streets. Of special note was the statement of guest speaker Frank Nikirk, University of California, who dwelt on an aspect in the relationship between equipment men, contractors and engineers.

Scientific vs. Practical

"The result of the introduction of science into construction was to develop two opposing groups; the practical and the theoretical, as represented by the constructor on the one side and the designer on the other," said Mr. Nikirk, in explaining the reasons behind the founding of the special course which he has been conducting at Berkeley during the past three years. Nikirk was the first speaker on the Wednesday morning program.

"The relationship between these two groups has not always been as it should be due to the different viewpoints and the different approaches toward solving construction problems," he continued. "Scientific training often ignores or discounts facts that do not fit into a pattern or formula of scientific rules, and the practical man is often intolerant of the technician who does not recognize the points or facts which he, the practical man, thinks are important."

Nikirk told how his University course was attempting to coordinate the practical know-how of the practical man with the theoretical knowledge of the engineering graduate.

Businessmen's Opportunity

Second speaker on the Wednesday program was Joseph T. King, AED Washington Representative, who told members what to look for in the new administration. Referring to President Eisenhower's "State of the Nation" address, King said, there was "the clear implication that all groups must subvert their special interests to the general welfare of the whole people. In this connection you are going to be affected." Reporting that the Director of the Bureau of the Budget had ordered all agencies to screen their construction projects and eliminate all but the very essential, King said he felt that for the first time in 20 years businessmen would collectively have an opportunity to promote objective and constructive programs designed to solve the nation's major economic problems.

Good Business Outlook

S. D. Maddock, president of C.I.T. Corporation, previewed market conditions as his financing firm expected to find them during the next 18 months. Maddock said that after careful study of market conditions, his company had concluded that, barring all-out-war, the following conditions were most likely to exist:

1. Business in general will continue approximately at its present level.
2. Construction equipment will be in about equal demand as at present.
3. The supply of construction equipment will increase as materials become readily available and manufacturers shift more and more to normal domestic production and distribution.
4. With an approximately level demand and a greater supply, competition in your business is certain to intensify.
5. Manpower, particularly good salesmen, will be in increasing demand.
6. Dealers will require more dollars or a faster turnover of present supply of dollars if they are to hold their own in the period ahead.

"They will be constantly driving for technological obsolescence of old equipment. That in turn will compel contractors to buy the new and trade in the old," noted Maddock, who warned that every available dollar must be ready "to work harder, support more sales, figure in more deals." He advised dealers to:

—Keep fixed assets at a minimum.
—Study inventory carefully to prevent immobilization of dollars.

Used equipment inventory should receive special consideration to prevent loss of working capital through unwise trade-in-policies.

—Dollars invested in rental fleets are largely immobilized. Although the extra earning power from rentals may justify fleet investment, dealers should always remember that those dollars are not in rapid turnover.

—Prevent open accounts from becoming means for the contractor to trade on the distributor's good will for long terms of payment.

Contractor Financing

Maddock also warned distributors against failure to recognize the financial limitations of contractors. He said that any financial arrangement, whether handled by the distributor, or by a third party, should be based on realistic rates of payment. "Remember," he said, "contractors are having a hard time in their financing these days. They have to provide money to pay for heavy duty, high priced equipment and have to provide money to run a high cost job. At the same time, their financial statement must be sufficiently liquid to qualify for bidding and to enable them to make bond. Too much short term debt is a definite handicap and is one of the principal reasons for failure among contractors. Put that down in your book and remember it."

Turning to the question of rentals, Maddock said that a contractor may have several reasons for wanting to dress up as a lease what is in fact a conditional sale. Some of the more important reasons are:

(a) The contractor wishes to avoid making the usual down payment required for conditional sales.

(b) The contractor wishes to treat the rental payment in its entirety as an expense, in hope of winning tax advantages.

(c) The contractor wishes to improve his financial statement for bidding and bonding purposes.

"No matter how valid any of these objectives of the contractor may be," Maddock said, "it is well for the distributor to remember that he has a paramount interest in making the sale and taking the profit from that sale free of any encumbrance."

The Thursday business session, sponsored by A.E.D. manufacturer members, consisted of a panel discussion on training and education programs conducted by manufacturers for distributors. The discussion covered sales, parts, and service personnel training at the factory or in the distributor's locality. Dr. Harold Maynard, Ohio State University, moderated the discussion with the assistance of Dr. James Davis of Ohio State. Distributor participants on the panel included H. D. Anderson; J. T. Hatten; and S. G. Marks, Marks Tractor & Equipment Co., Cleveland, Ohio. Manufacturer members included John Shaw, International Harvester Co.; E. H. Holt, Barber-Greene Co.; and Gordon Nelson, Koehring Co. M. B. Garber was chairman.

★ 1953 Executive Committee of AED: R. J. Finn, Vice-President, Bode-Finn Company, Cincinnati, Ohio; George W. Gagel, Vice-President, Machinery & Supplies Co., Kansas City, Missouri; S. John Oechsle, President, Metalweld, Inc., Philadelphia, Pa.; Frank Skidmore, Executive Vice-President, Contractors Equipment & Supply Co., Albuquerque, New Mexico; P. D. Hermann, Executive Secretary, Chicago, Illinois; J. W. Halls, Vice-President, Consolidated Engines & Machinery Co., Ltd., Montreal, Canada. Missing is F. J. Fitzpatrick, Treasurer, Parker-Danner Co., Hyde Park, Mass.

★ Manufacturer's panel at Thursday session of AED

A.E.D. Officers for '53

President: S. John Oechsle, Metalweld, Inc., Philadelphia, Pa.

Executive Vice President: Frank Skidmore, Contractors' Equipment & Supply Co., Albuquerque, N. M.

Vice Presidents: George W. Gagel, Machinery & Supplies Company, Kansas City, Mo.; R. J. Finn, Bode-Finn Co., Cincinnati, Ohio; J. W. Halls, Consolidated Engines & Machinery Co., Ltd., Montreal, Quebec.

Treasurer: F. J. Fitzpatrick, Parker-Danner Co., Hyde Park, Mass.

Board Members: M. E. Rupp, Rupp Equipment Company, Buffalo, N. Y.; L. C. Basham, West Virginia Tractor and Equipment Co., Charleston, W. Va.; R. J. Finn, Bode-Finn Company, Cincinnati, Ohio; S. F. Laskey, Northwestern Equipment, Inc., Fargo, N. D.; J. A. Benson, Benson Tractor Company, Houston, Texas; G. H. Jamison, A. H. Cox & Co., Seattle, Wash.; R. E. Corson, Ray Corson Machinery Co., Denver, Colo.; J. W. Halls, President of Canadian Association of Equipment Distributors, Consolidated Engines & Machinery Co., Ltd., Montreal (1 year).

A.E.D. Goals

In a brief message to the membership following his installation as President, S. John Oechsle named some general goals toward which the association would work during the coming year. Among these were:

—Expanded work in the fields of customer-distributor and manufacturer-distributor relations.

—Continuation of the statistical research program initiated in 1952.

—Continued expansion of services to the industry provided through the association's executive offices.

JOB and EQUIPMENT IDEAS

★ Flags are mounted on this Minnesota maintenance grader to keep motorists at a safe distance in passing

Mobile woodworking shop

Contractors with considerable bridge formwork and other woodworking to do will be interested in the mobile woodworking shop pictured here. Designed for use outside the shop building, it was offered as a beneficial suggestion by an employee at Long Beach Naval Shipyard. Put pneumatic tires on it and the outfit would have possibilities on hanger construction jobs.

The shop consists of two units, each 5 by 14 ft., mounted on hard rubber tires and adaptable to being towed to any place in the shipyard.

The machine unit has a band saw, a jointer, a table saw, a drill press, an overhead cutoff saw, and a vertical belt sanding machine. The machines are all connected to a central fuse box, so that a single 44-volt plug will activate the main switch. Each machine is connected to the central electrical box, and each has its own "Off" and "On" button.

The second unit is a mobile woodworking bench with woodworker's vises mounted on opposite corners, and a five-inch machinist's vise mounted at one end. The bench has drawers on both sides for tools, screws, nails, and needed hardware. One drawer on the after end is full width of the bench to carry woodworker's door and "C" clamps. Each drawer is equipped for locking.

Where a great amount of boat work in the shipyard is done outside the woodworking shop proper, the problem has been to transport individual woodworking machines by truck to the work area or to carry the material to be cut back to the shop for such operations. Both processes are time consuming. With these self-contained units, repair work can be done at the most convenient location in the yard and many manhours can be saved.

Flags protect traffic from grader blade

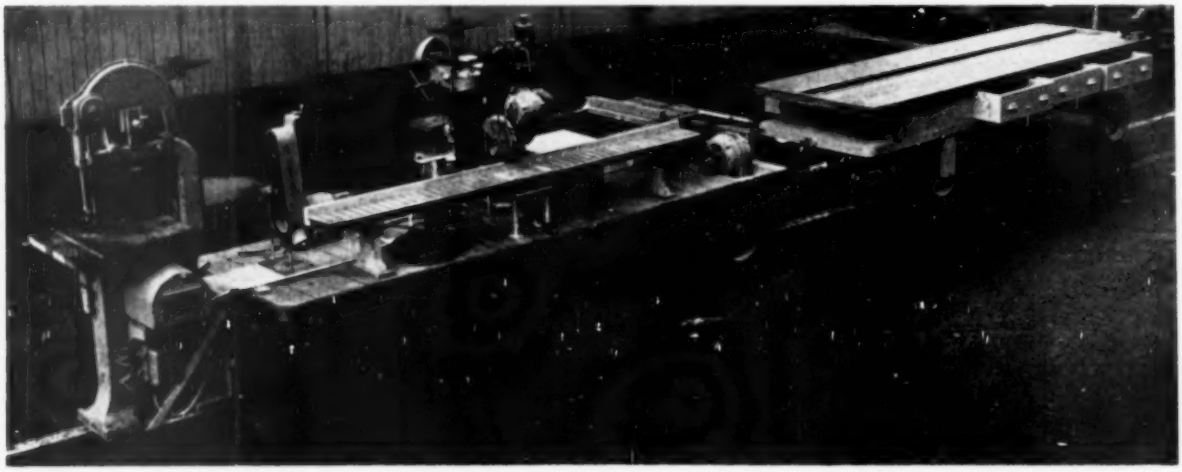
When a road mix or other blading job is being done in the midst of one-lane traffic, the protruding blade is something of a hazard. Since it lies close to the ground a speeding motorist may skirt it too closely for safety. Minnesota maintenance men have taken care of this situation by mounting flags horizontally on either side of the grader. The accompanying picture shows such flags, which are at or above motorist eye level and thus are clearly visibly against the skyline.

Ski attachment for bituminous leveling courses

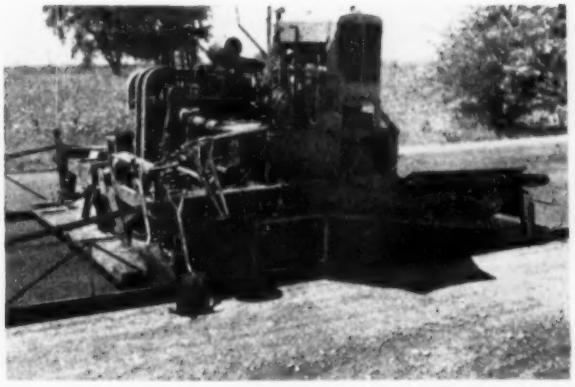
The accompanying pictures show how several contractors placed leveling skids or skis on their bituminous finishers for resurface work in Illinois during the past season. A picture of a similar device was published in Roads and Streets sometime back.

According to Robert H. Tittle, Engineer of Construction, Illinois Division of Highways, this device comes under patent rights purchased from Jaeger Machine Company by Pioneer Engineering Works, Inc., of Minneapolis. The latter company granted permission to use the type on certain Illinois projects in 1952.

The device succeeds in leveling out waves in the old pavement by raising the screed of the finishing machine at the low spots. But the Illinois engineers have found that it does not entirely correct edge settlement in the old pavements. In order to correct edge settlements, contractor is required to place hand leveling mixture where needed along the edge prior to placing course mechanically.



★ Mobile unit takes the woodworking equipment to the point where needed



★ Ski attachments used on finishing machines by Illinois contractors during past season for resurface work

Row of trailers used for supply depot

Here is a photo of several large trailer units used in a rather unusual manner. The contractor is Grandview Construction Company of Mount Vernon, New York. The project was a grading job for the New Jersey Turnpike a couple of years ago. The Roads and Streets editor snapped this picture because the trailers were lined up conveniently like a string of box cars along one side of the field yard of the contractor, in handy shuttle distance from the field shop and office. The cars contained an extensive line of parts and supplies, each trailer being fitted with stock bins such as are found in a well ordered shop commissary or parts depot.

Labor saving way to spread concrete by hand

Sometimes in placing concrete pavement it is necessary or at least expeditious to do some hand shovel work in front of a finishing machine. This is especially true when the contractor is paving a short run without using a mechanical spreader in front of the finisher.

An example of the labor-saving technique sometimes worked out by experienced spreaders or puddlers is pictured here. The Roads and Streets Editor snapped the photo on a state road job near Dallas. Tyree Bell, President of Austin Road Company, of Dallas, the contractor, in commenting on this picture, said: "In this instance at times two puddlers each used two shovels ahead of the finishing machine, to expedite spreading. The picture demonstrates how to pull concrete from one place to another, rather than digging in, picking up, and depositing, which takes much more time and effort."

This contractor agrees that best concrete pavement is produced with a minimum of such handling of the concrete. The dragging technique, however, minimizes any tendency toward segregation.

• In an effort to expedite the handling of contractor's monthly pay estimates, the construction division of the Kentucky Department of Highways has revised the signature sheet applying to each active contract.

C. B. Owens, director of construction, estimates that a saving of at least two to three days per month will be effected by the revision. The revised form eliminates the necessity of preparing separate certifications.

★ Trailers lined in a row, to serve as field parts depot

★ Two puddlers with two shovels each can "drag" a lot of concrete in a hurry when this becomes necessary on paving work

★ Grading for Chrysler Corporation's new multi-million dollar proving ground. In some spots crossed by the test track location, the grading contractors had to cut as much as 18 ft. of muck to reach stable material

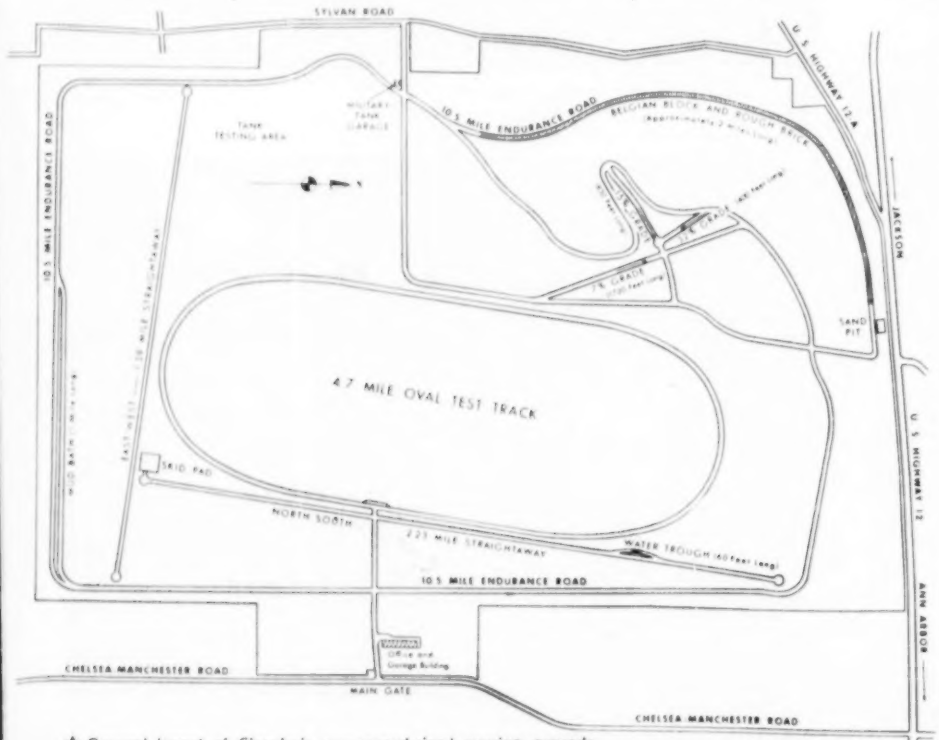
Chrysler Building 140-mph Test Track

A contract to pave the new high speed test oval and two straightaways of the new 3800-acre Chrysler Engineering Proving Grounds, near Chelsea, Michigan, has been awarded to the S. J. Groves and Sons Company of Minneapolis, Minn.

Paving work, to begin in May, will involve special techniques to overcome unusual problems connected with paving the scientifically designed curves of the test track. The 4.7-mile oval section has been designed to permit testing speeds as high as 140 mph on its curves without side thrust, and 275 mph with guided wheels. Laying reinforced concrete will require special modifications of paving equipment which will be worked out through the collaboration of engineers of Chrysler Corporation and the Groves company.

The contract provides for the construction of reinforced concrete pavement for the test oval and two straightaways of 2.23 and 1.59 miles in length. Paving is scheduled to be completed on or before October 1, 1953.

The 2,250,000 cu. yd. excavation and grading work for the grounds, now largely completed, represents the largest earth moving project ever undertaken in the state of Michigan by a private organization. Holloway and Thompson Company, Detroit, had the prime earth moving contract. Leveling began on May 15, 1952, when a fleet of owned or leased tractors and scrapers, including 12 International TD-24's and other items, strted working on a 60-ft. deep cut at the northwest corner of the oval track. From this cut, more than 1,000,000 cu. yds. of earth was taken for use as fill on both the oval and straightaway tracks.



★ General layout of Chrysler's new record-sized proving grounds

Unique Track Design

Automotive engineers and technicians had long complained that one of the difficulties with oval-track, high-speed endurance tests was that constant speeds could not be maintained when cars entered curves.

This complaint is eliminated in the track design. Instead of entering curves on a sweeping circle, drivers will be able to maintain maximum speeds as they enter both north and south curves of the track on a 3,000-ft. easement spiral. The spiral, 95 ft. wide with a 0.0025 left-to-right grade, makes the transition into the curves easier on both driver and automobile, as it eliminates much of the effect of centrifugal force.

The centerline of the pavement around the entire oval will be at a uniform elevation. In the curves, maximum super-elevation from the inside to the outside edge of the pavement will be 13 ft.

The oval track and the straightaways will serve to test wind effects on cars, braking power, high speed fuel consumption, transmission and differential performance, steering characteristics at given speeds and suspension systems. Of equal importance will be the purpose served by a second or "endurance" track. The endurance track, designed and constructed as scientifically as the oval and straightaways, will be composed of alternate sections of macadam, Belgian blocks, gravel and mud. Its purpose will be to test a car's ruggedness under conditions matching those encountered anywhere in the United States.

The proving ground is under the supervision of Ira Johnson, a veteran in the automotive field. Design is by W. R. McIlveen and John Gillie, both of Chrysler, with Drury, McNamee and Porter serving as consultants.

★ Harold Thompson, of Holloway and Thompson, Detroit earthmoving contractors; and Glenn Sawyer, Vice President of Wolverine Tractor and Equipment Company, International Harvester distributors in Detroit, discuss progress on Chrysler proving ground

• The President's Materials Policy Commission recently estimated that there will be a 75 per cent increase in automobiles in the United States between 1950 and 1975, with a 150 per cent increase in the number of trucks. This means 85 million motor vehicles in 1975, compared with 53.4 million registered at the end of 1952. Trucks, according to this, will number 20 million, compared with 9.5 million today.

Harris County pushes canal project

★ 337 cu. yd. had been excavated at the time this photo was taken in Harris County, Texas—shows a Link-Belt Speeder crane with 80-ft. boom and 4-yd. bucket digging a new canal for Cedar Bayou

New Jersey highway routes renumbered

New Jersey's state highways were renumbered during the first week of January, under a state-wide changeover program announced by State Highway Commissioner Ransford J. Abbott. A total of 2,500 improved route markers were stock-piled in various locations and several "dress rehearsals" held in preparation for the quick installation job.

The renumbering is the first since the state numbering system was revised in 1927. Additions to both the State and U. S. systems since that time have resulted in a "highly confusing" designation pattern in this state. The new system resulted from long study by specialists in conformity with the latest national practice. The proposed system was reviewed by state and federal agencies, automobile and trucking associations, oil companies, and map makers. Discussions with representatives of these groups were held more than a year ago and resulted in approval.

The route renumbering plan is based upon the following considerations:

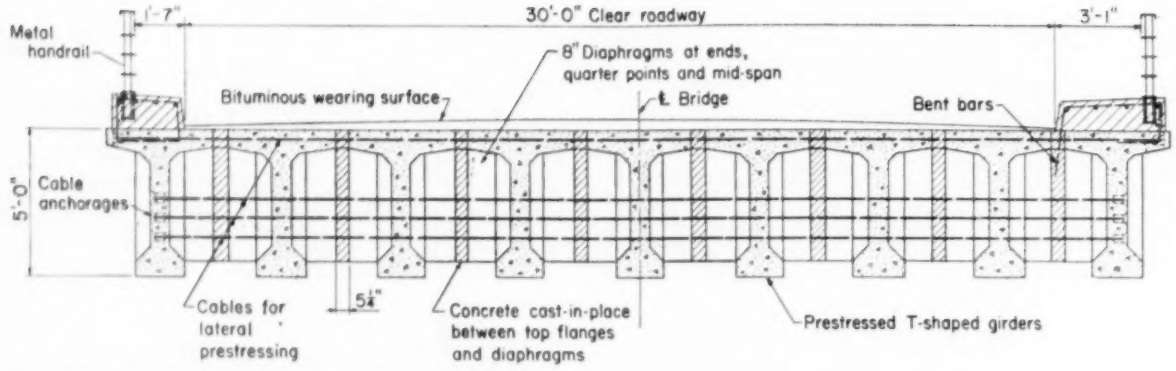
1. No state highway now bearing a U. S. number will carry a separate state designation.
2. Any number now assigned to a U. S. route will not be used for a state route.
3. Overlapping of route numbering along a single highway is reduced to a minimum.
4. State highways will be continuously marked with the same number along the line of greatest traffic flow.
5. With the exception of U. S. 9W (a federal route designation), no letters will appear on route markings.
6. Where New Jersey routes join New York and Pennsylvania highways, common numbers have been assigned.
7. Where consistent with the above conditions, present state route numbers remain unchanged.
8. The Garden State Parkway, the New Jersey Turnpike, and the Palisades Interstate Parkway are given numerical designations.

The new route markers are 18 in. in diameter, for easier reading. The changeover is expected to result in lower maintenance costs; careful selection of locations and elimination of duplication of state and federal designations will reduce the required number of signs by about 3,500.

The Highway Department plans to continue the use of old route markers on highways where the present number is not changed, a decision based upon the shortage of critical metals. When restrictions are lifted, the new type of marker will be installed on these routes. There is a total of 10,000 route markers on the state system.

Due to the fact map companies were given a full year to prepare for the change, new road maps were ready for distribution by several oil companies as soon as the changeover becomes effective.

• Over 18,000,000 vehicles used the New Jersey Turnpike during its first year, compared with 7,600,000 predicted.



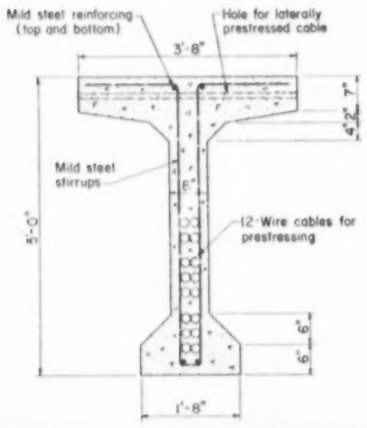
★ Typical section through deck of Maryland prestressed bridge

Maryland Begins First Prestressed Concrete Bridge

Post-tensioned girders to be used in 100-ft. span structure, herein detailed for engineers and contractors who are watching the fast development of prestressed concrete as a type of bridge construction.—Editors.

THE Maryland State Roads Commission awarded contract in October, 1952, for a 100-ft. single-span prestressed concrete bridge, first of its kind in the state. The structure is to carry the Baltimore-Harrisburg Expressway over Shawan Road, west of Marble Hill in Baltimore County. Bonwit Construction Company, Inc., of New York City, was awarded the contract on low bid of $77,400.00 covering the entire construction, and started work in early November.

Plans prepared under the supervision of Albert L. Grubb, Engineer of Bridge Design for the State Roads Commission, call for 9 prestressed concrete T-shaped girders placed side by side with a small space between the top flanges, later to be filled with cast-in-place concrete. The girders will support a 30-ft. clear roadway with one 3' 1" sidewalk and one 1' 7" safety curb.



★ Typical section through prestressed girder

Girder Details

The bridge is designed to support the maximum highway loading in accordance with AASHO standards for arterial highways. The Bureau of Public Roads "Design Criteria for Prestressed Concrete," dated March 10, 1952, was the basis for designing the prestressed concrete girders.

The girders have a T-shaped cross section (see detail) with uniform 60-in. depth, or 1/20 of the 100-ft. span length. The top flange is 44 in. wide and varies in thickness from 9 in. at the junction with the web, to 7 in. at the outer ends. The bottom flange is 20 in. wide and 6 in. thick. The web is 8 in. thick, except at either end where it is as wide as the bottom flange to form a solid block for the end anchorages. The girders rest on two reinforced concrete abutments, supported on steel bearing piles.

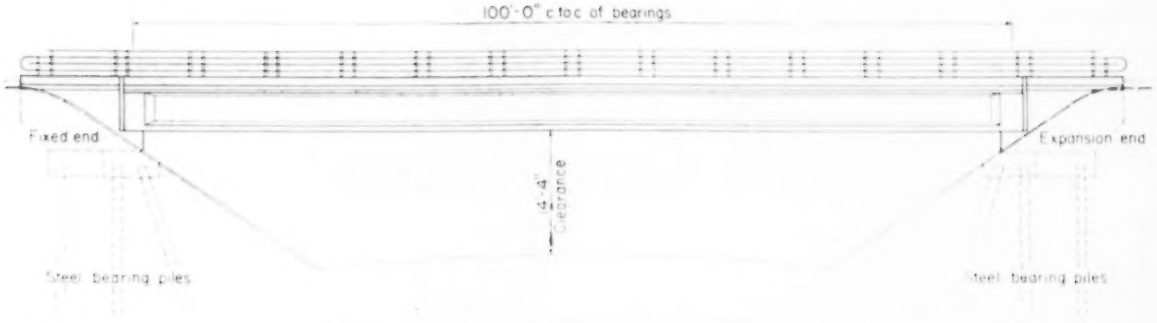
All girders are to be cast and cured, and prestressed only after the concrete has developed 4,000 psi compressive strength as determined by standard 6x12-in. test cylinders. The girders will then be post-tensioned by means of 16 cables, each of which contains 12 high-tensile-strength steel wires of 0.196 in. diameter. The cables are placed in the girders before concreting and are protected with flexible metallic hose. This sheath prevents concrete from bonding with the wires. When the cables are stressed and anchored, a liquid grout is forced into the tubes and around the wires to protect them from the elements and to provide a bond with the concrete. The cables when placed are draped in a parabolic curve with all as near the bottom of the girder as possible at mid-span and spreading upward at each end. The cables are also placed symmetrically through the girder cross section so that no unequal prestress force will cause a girder to bow sideways.

Specifications call for wire of 220,000 psi. minimum ultimate strength. Initial prestress or tensioning force on each cable amounts to 47,800 lb., or a unit stress of 132,000 psi. The total force required to prestress the 16 cables in a girder is slightly over 380 tons. The end anchorages will be manufactured by the Freyssinet Company. When all cables are securely fastened after stressing, the anchorages are to be encased in concrete.

In addition to the high-tensile-strength steel wire, the girders are reinforced with ½-in. diameter U-shaped mild steel stirrups spaced throughout the length of the girder, plus extra mild steel reinforcement at the supports.

Concrete Diaphragms

The girders are stiffened at each end, at the quarter points, and at mid-span with concrete diaphragms cast integrally with the main structural bridge members. Holes are formed in these diaphragms as well as in the top flanges of the girders through which cables are later threaded transverse to the direction of the bridge span. These cables are also prestressed to hold the girders together and help spread concentrated deck loads to more than one girder. There are 20 such cables in the top flanges, spaced 4' 10" apart, three in each intermediate stiffener and two in the end blocks. The same prestress force and



★ Elevation of the Maryland prestressed bridge—a structure of size having frequent application in highway and municipal programs

anchorage units are used as in the longitudinal prestressing.

Concrete for the prestressed girders, diaphragms and the end anchorage encasement is specified for 5,000 psi. at 21 days; maximum 2½-in. slump; a maximum ¾-in. size coarse aggregate and also fine aggregate conforming to the State road specifications and a minimum of 8½ sacks of portland cement per cubic yard.

When the girders are placed on the abutments, a 5¼-in. space will exist between the adjoining diaphragms and top flanges. This space is to be filled with cast-in-place concrete. Lateral prestressing will proceed only after this fill-in material has hardened to 4,000 psi.

Must Ohio Turnpike Take Bids On Both Paving Types?

Serious disruption in the construction schedule for the Ohio Turnpike is a possibe result of the February 19 court decision which opened up paving bids to asphalt as well as concrete. A referee for the Ohio Second District Court of Appeals at Columbus rendered this decision as the Turnpike Commission was geting set for large-scale spring lettings.

The referee's opinion requires a court order to make it valid. Following announcement of the opinion, the Commission decided to proceed with lettings on the basis of concrete, with five jobs set up for March 18, one for March 30, five for April 5 and more to follow. Speedy awarding of a large volume is planned in order to make the most of the 1953 season.

Present designs are based on portland cement concrete as the paving type for dual main roadways, as a result of recommendations by the Turnpike's consultants, J. E. Greiner Co. Adoption of a specific type was based on the premise that the pavement type was a design matter, and that the turnpike officials were within their right to analyze economic and public service factors, including ultimate estimated cost as well as first cost, for comparable designs, and make a choice in the interest of the public, the financing agencies and the state.

Asphalt interests in Ohio, however, thought otherwase and a campaign involving newspaper and other advertising has been waged to effect a change. A mandamus action was brought by Richard H. Shafer, president of the Ohio Road Improvement Co., which operates several asphalt plants in the state. In making the decision to open the turnpike to competitive type bidding, court referee Robert P. Duncan is quoted in a newspaper dispatch as saying that "the evidence pointed to some kind of an arrangement or understanding between T. J. Kauer, chief engineer for the Turnpike Commission, and the Greiner firm that only rigid (concrete) pavement was to be considered." Kauer immediately denied any such understanding.

Possible financial loss to the Turnpike Commission is seen in the fact that delays due to further legal procedure and necessary revision of construction plans, may delay the opening of the road to toll collections. Construction delays would entail an estimated cost of $63,000 daily to the Turnpike, according to a statement made by Commission Chairman James W. Shocknessy last December when it was decided to go ahead with concrete. Governor Frank J. Lausche said that the decision would "create disorder and inordinate new expense for every governmental subdivision."

Duncan in his opinion wrote that "several court cases point to the fact that true competitive bidding is required in Ohio and that contracts made without such bidding are void." It was further stated that "public bodies may not specify a material controlled exclusively by one person, firm or group."

The 241-mile dual highway involves an estimated $50 million in paving business. Checkerboard alternation between concrete and black-top is a possibility under the new ruling.

New technical bulletin on cranes, shovels, draglines

The Power Crane and Shovel Association has issued Technical Bulletin No. 4, entitled "Power Cranes, Shovels and Draglines—Attachments, Traction and Operation."

This 60-page bulletin, replete with tables, diagrams and charts, is the fourth in a series on the operation and maintenance of excavating equipment. It is valuable as text material for engineering colleges, students, professional engineers, contractors, operators and others dealing with excavation and materials handling problems.

There are chapters on such subjects as available attachments, selecting the shovel or boom attachment, selecting the right crane boom and load dropping equipment, clam shell attachments, pile driving, magnet cranes, rock tongs and grabs, dragline attachments, backbone attachments, how to set up and operate the shovel for best efficiency, similar chapters for the other forms of excavator equipment.

Copies of this bulletin may be obtained by sending $1.00 in U. S. stamps, money order or bank draft to the Power Crane and Shovel Association, 74 Trinity Place, New York 6, N. Y., U. S. A. Please give the nature of your business and your title.

Pressed wood joint

Instead of steel as a joint separator in the curbing, Anderson & Sons, Minneapolis contracting firm, used pieces of ⅛ in. Masonite pressed wood in building the curbs adjacent to paving of U. S. Highway 75 north of Canby, Minn. Pieces 8 in. by 14 in. were used at intervals of 5 ft. Six or seven reuses were experienced. Cost of the pressed wood is considerably less than steel plates, and the results were comparable, the contractor reports. The paving project was let by the Minnesota highway department.

Effect of Delay in Applying

Concrete Curing Membrane

California tests show importance of getting the curing materials in place immediately after water sheen has disappeared from the concrete pavement surface.

By Bailey Tremper

Supervising Materials and Research Engineer
California Division of Highways

THE need of curing concrete is so well known that it would be pointless to again enumerate the advantages that accrue from the retention of moisture during the early stages of the hardening process. Little has been reported, however, on the effect of delay in applying the curing treatment during the first several hours after the concrete is mixed and placed.

This paper gives the results of pilot tests to show the effect of withholding curing treatment under conditions that favor the rapid loss of contained moisture due to evaporation from the exposed surface of the concrete. The paper deals mainly with curing by means of concrete curing compounds, or so-called impervious membranes, a method that is employed extensively. It does not purport to cover all conceivable mixtures, construction practices or weather conditions. Nevertheless, the findings point to a principle that does not receive sufficient recognition in practice.

Preliminary tests had demonstrated that a distinct difference in appearance resulted in the formed surfaces of specimens that were sealed very soon after they were cast compared to those to which the seal was not applied until after several hours had elapsed. Following this observation, the additional tests reported herein were made.

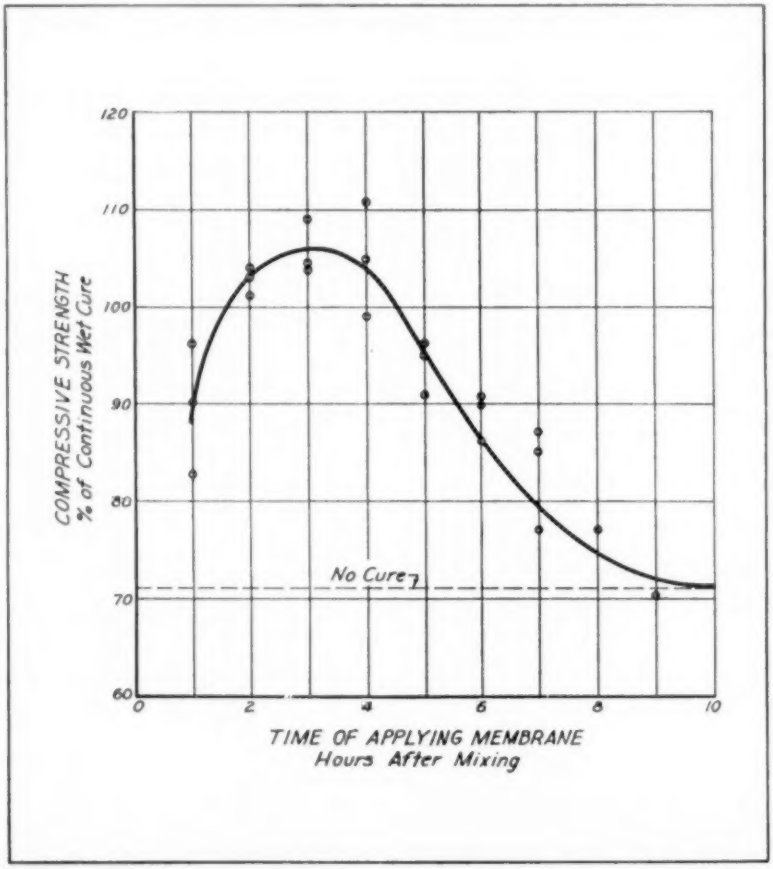
Effect on Strength

The accompanying figure shows the principal results with respect to the strength of the concrete. It illustrates the value of applying membrane cure at the proper time after concrete is mixed and placed. It is the result of three series of test specimens that were coated with curing compounds at intervals of from one to ten hours after specimens of fresh concrete were molded. The strength of control specimens that were cured with a water-saturated blanket continuously from the time of casting is given a rating of 100 per cent. Other values are relative to this base. When no curing of any kind was applied the relative strength dropped to 1 per cent.

The curve shows that evaporation of water is beneficial during the period that the concrete is plastic and is bleeding due to the settlement of the solid particles. This process continues under the conditions of the tests for about three hours. At the conclusion of this period, if further loss of water is not prevented the resulting strength of the concrete is seriously impaired. If the curing treatment is not applied before about seven hours its value is largely lost. Loss of strength due to applying the curing compound too early, as at one and two hours, may be due in part to a faulty membrane on a surface that is too wet. This, however, is not the complete answer, for reasons discussed below.

Same Trend Found

In one group, not indicated in the figure, the same trend was found



★ Strength is highest when curing is started at optimum time

Published in California Highways and Public Works. November-December, 1952.

when the specimens were tightly sealed with metal lids and tape. When sealed with metal immediately the strength was the same, 100 per cent, as obtained with a cotton mat applied immediately and kept wet continuously. The strength increased with delay in applying the metal seal up to three or four hours. If sealing was delayed beyond four hours the strength fell off but always remained at a higher level than resulted from comparable membrane cure. It is indicated, therefore, that the trend of the cure is general in its application to curing by methods other than that by membrane.

These results were obtained with specimens 6 in. in diameter and 6 in. high, cast in metal cans with soldered bottoms. The molds were surrounded with sand. They were exposed outdoors, away from shade during the summer, adjacent to the laboratory at Sacramento. The weather was clear, relative humidity was low and afternoon temperatures reached 90 to 100 degrees. It was thus typical of rather severe, but not extreme, conditions with respect to rate of evaporation.

After 10 days' exposure the specimens were removed from the molds, placed in water for two days and then tested for compressive strength. Saturation in water was necessary to bring the specimens to comparable moisture contents before testing for strength but it undoubtedly raised the relative rating of the poorly cured concrete.

Two series, each containing 24 specimens, were run. In the first series, 20 cylinders were cured with gray pigmented curing compound, two each at hourly intervals up to 10 hours; two specimens were covered immediately with cotton mats which were kept damp continuously and two received no curing treatment whatever. Half of the specimens were tested for compressive strength; the others were sawed longitudinally for observation. In the second series, seven cylinders were cured with gray pigmented curing compound, seven with white pigmented curing compound and seven with metal lids; one each by each method at hourly intervals up to seven hours. Of the remaining three specimens, one was sealed immediately with a metal lid, one was covered immediately with a damp cotton mat and one received no curing treatment.

Test Mixture

In the first series the concrete contained five sacks of cement per cubic yard, 1-in. maximum size of aggregate and water to give a $3\frac{1}{2}$-in. slump. In the second series, six-sack concrete was used with 1-in. maximum aggregate and water to give a $3\frac{1}{2}$-in. slump.

The plotted points in the figure represent relative strengths of indi-

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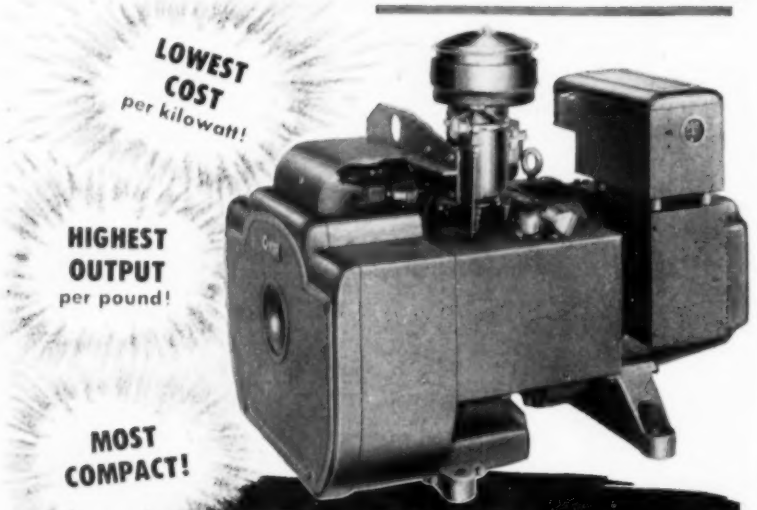

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vidual specimens. Results with the gray curing compound were slightly higher than the white, but the data are not sufficiently comprehensive to warrant a distinction based solely on tint.

The cylinders that were sawed longitudinally were studied with a low power binocular microscope. As curing was delayed the concrete was seen to be increasingly chalky in appearance and the fine mortar increasingly weaker as revealed by a tendency for it to be torn away from the coarser sand grains by the process of sawing. Poor curing was also evident on the side and bottom of the specimens when they were removed from the molds. They became increasingly rough-textured as curing was delayed.

The optimum time of applying the curing medium probably varies, within limits that are not too wide, according to the materials used, the consistency of the concrete, the depth of the section and the availability of external moisture. Replacement moisture can reach the concrete through surfaces other than that exposed to view, for example, through the bottom of a slab laid directly on a moist subgrade. The tests reported here are believed to represent slabs such as a bridge deck where there is no contact with the subgrade. Probably they also represent pavement slabs laid on a cement-treated subgrade that has been sealed with asphalt.

Although emphasis has been placed on the effect on compressive strength there are many reasons to believe that the adverse effects of poor curing practice extend to other important properties of concrete also.

Regardless of what may appear to be mitigating circumtsances, it is a good rule to follow that intentional curing should start immediately after the water sheen has disappeared from the surface. If a membrane is to be used and if it is not applied promptly the surface should be kept continuously moist by some effective means. Covering with saturated burlap or blankets or frequent sprinkling with water would constitute effective means.

●

SAE earthmoving industry conference at Peoria

The Fourth Annual SAE Earthmoving Conference will be held April 8 and 9 at the Pere Marquette Hotel, Peoria, Ill. The Central Section of the Society of Automotive Engineers will again sponsor the activity. R. S. Stevenson, executive vice-president, Allis-Chalmers Mfg. Co., will keynote the meeting. Technical sessions will include papers on electrical drives, asphalt paving machinery and methods, transportability of earthmoving equipment, foreign competition and predicted mechanical developments.

Research Board Studies Trucking Economics

TENTATIVE programs for an extensive research project leading to a determination of the most economical range of sizes and weights of over-the-road trucks and truck combinations to transport goods and freight over future highways of the United States have been completed by a committee of the Highway Research Board. An extensive study of the economics and load-carrying capacities of both highway freight vehicles and highway facilities is planned by the committee.

In explaining the need for the study, it was stated that in the movement of freight by highway, the over-all cost to the ultimate consumer includes both the costs of owning and operating vehicles and the costs of providing highway facilities upon which trucks and truck combinations can operate. In the economic system of the United States, the ultimate consumer pays all the transportation costs, partly as direct charges for trucking services and partly as indirect charges for highway facilities.

The committee says that the broad task is to determine what types, sizes, and weights of freight-carrying motor vehicles can be balanced with pavements and bridges of appropriate capacities to produce the lowest over-all cost of highway freight transportation.

More Data Needed

There are indications from previous partial studies that as the load capacities of pavements and bridges are increased, the costs of highway construction and maintenance increase, but the degree and trend of such increased costs, per unit of freight transported, have not been fully developed. Other partial studies indicate that as the size and weight of truck combinations are increased, their operating costs, per unit of freight transported, decrease. The complete degree and trend of these operating costs, likewise, have not been fully developed. The committee says that its basic problem is to determine the range of truck sizes and weights, that will provide the lowest over-all cost of highway transportation for the total of commodities transported by highways, taking into account the two opposite cost trends.

Two phases of this broad research project have been programmed by Committee No. 5 of the Department of Economics, Finance and Administration of the Board under the task assignment title of "Economics of Motor Vehicle Size and Weight."

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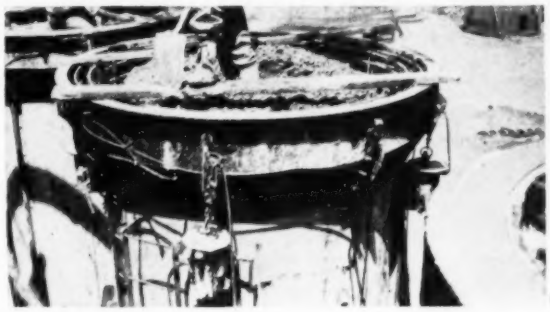

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One phase will be a study of commodity densities, packaging methods, market units, and transportation tonnages to determine the optimum payloads for those commodities whose annual production tonnages are of sufficient importance to the economy of the United States that they should be transported at the lowest practical over-all cost.

Study Gross Weights

The second phase of the committee's research is to determine the variations in both direct and overhead costs of operating highway freight vehicles, as the sizes and gross weights of the vehicles may be increased. From previous partial studies there are indications that the savings in direct operating costs progressively diminish towards the higher weights. Such a trend in costs would indicate that there is an upper gross-weight limit beyond which reductions in truck-operating costs cannot be obtained by using greater gross weights. The committee plans to determine the trend of operating costs by a comprehensive study of the statistics and costs of truck combinations of various capacities from about 35,000 lb. gross to gross weights much above many present weight limits. To obtain the spread of data required it will be necessary to explore private road operations as well as all types of trucking services on public highways.

Another phase of the committee's research, which will be studied later, is the relative and actual costs of highways of various load capacities. Currently, research work in this field is planned under AASHO sponsorship. One full-scale test of a series of pavement designs using flexible pavement construction is now underway at Malad, Idaho, under sponsorship of the Western Association of State Highway Officials and industry working cooperatively through the Highway Research Board. AASHO is planning a full-scale road test in Illinois, which will include various pavement designs, both flexible and rigid.

In both of these tests, loaded tractor semitrailers of different axle weights are to be run many thousands of times over the different sections of pavements to determine the effects of specific loads on pavements of specific designs. From these tests, it is expected there can be developed cost data which can be used with information from the other two phases of the committee's project to predict the optimum range of truck sizes and weights that may provide minimum over-all highway-transportation costs in the future.

The Highway Research Board Project Committee No. 5 is composed of representatives of state highway departments, planning survey departments and other government agencies interested in highway transportation problems, truck and trailer manufacturers, motor carriers, and trade associations. Herbert S. Fairbank, deputy commissioner, Bureau of Public Roads, is chairman, Hoy Stevens, formerly with the American Trucking Associations, Inc., and now with BPR., is secretary of the committee and is to direct the field work of the two program phases adopted.

STATES AND COUNTIES ARE SAVING TAX MONEY

By Salvaging Old Oil Macadams

NORTH HOLLYWOOD, CALIF. —Reports from many sections of the country are revealing a practical way of making road and highway dollars go farther. By the simple expediency of re-claiming old or worn-out asphaltic oil mats or oil macadam, literally hundreds of thousands of dollars are being saved.

Until recently there has been no economical method of re-claiming these old mats. However, with the introduction of the Wood P-600 Preparizer, this problem has been completely whipped.

A Wood Preparizer pulverizing and blending 1½" to 2" asphalt with 2" of base material — *in one pass.*

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The savings are obvious. The expense of equipment and manpower for importing materials is completely eliminated, and aggregate costs are reduced to a fraction of the normal outlay.

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Pulverizing old blacktop on a Montana county road.

Complete information may be had from any Wood distributor, or by writing Wood Manufacturing Co., Box 620, 6900 Tujunga Ave., North Hollywood, California. Export Office, 3938 Wilshire Blvd., Los Angeles 5, California.

Kennedy elected president of American Concrete Institute

Henry L. Kennedy, manager, Cement Division, Dewey & Almy Chemical Co., Cambridge, Mass., was elected president of the American Concrete Institute for 1953 at the Institute's annual meeting in Boston. Mr. Kennedy is an authority on air entrainment. He succeeds A. T. Goldbeck, Managing Director, National Crushed Stone Association.

Other new officers include Charles S. Whitney, consuling engineer, Amman and Whitney, for a 2-year term as vice-president, and directors as follows: Frederico Barona de la O., Hydraulic Resources Ministry, Mexico City; Arthur P. Clark, American Iron and Steel Institute, Washington, D. C.; J. E. Jellick, Portland Cement Information Bureau, San Francisco. C. H. Scholer, Kansas State College, Manhattan, Kans., continues as v. p.

Uniform contract form recommended for municipal construction

A national joint committee of the American Public Works Association and The Associated General Contractors of America has recommended the use of a uniform contract for municipal engineering construction projects (excluding building construction) in municipalities throughout the country.

The newly-formed committee, at its first meeting in Chicago Jan. 28, agreed that one should be prepared and submitted to its parent associations for their approval. It further agreed that the "Suggested Form of Contract for Engineering Projects," 1952 edition, prepared jointly by the American Society of Civil Engineers and the A.G.C., should be studied by the committee and "consideration given to adapting it for use by municipalities."

The committee, which was set up in October, 1952, at the invitation of A. S. Horner, of Denver, president of the A.G.C., has as its purpose the consideration of matters in municipal construction of interest to municipal and general contractors, public works officials and others, and is expected to submit appropriate recommendations for approval to its parent organizations, from time to time.

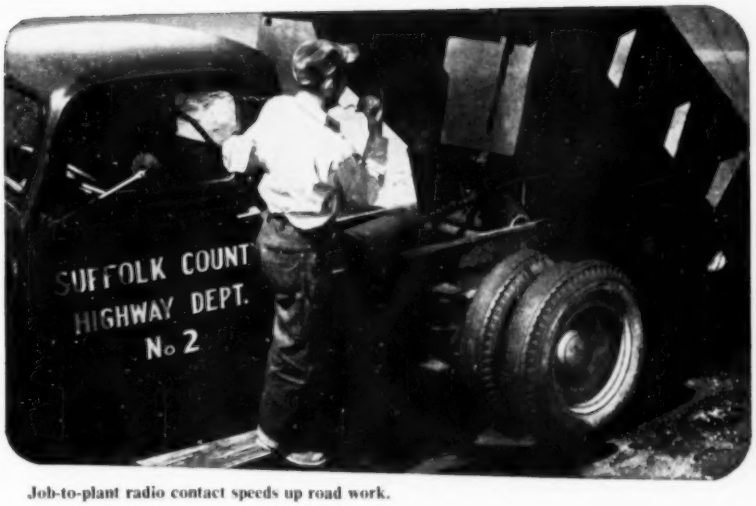
Mr. Horner's invitation to form the committee was accepted by Allan H. Rogers, of New York, president of A.P.W.A. Both attended the committee's initial meeting. Co-chairmen of the group, appointed by the presidents of their respective associations, are George R. Thompson, City Engineer, Detroit, for A.P.W.A., and C. R. Ralph, Kaw Paving Co., Topeka, Kan., for A.G.C.

The committee also has begun a campaign to secure better salaries for construction engineers employed by municipalities, and to urge competitors bid contract award of municipal construction, along with more adequate cost keeping.

Agreeing that inspection on municipal construction is too often unsatisfactory, the committee requested the A.P.W.A. and the A.G.C. to adopt resolutions recommending that all municipal construction and inspection be under supervision of a registered professional engineer; and further, that both functions be under the supervision of the same engineer or engineering department.

Kitfield heads new Massachusetts group

Philip H. Kitfield, who recently retired as Chief Engineer of the Massachusetts Department of Public Works, has been appointed Chief Engineer of the newly formed Massachusetts Turnpike Authority, with headquarters at 80 Boyle Street, Boston 16, Mass.



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Ground Your Cranes!

The following was presented by Alfred A. Wolf, Supervising Safety Inspector, Bureau of Construction of the New York State Department of Labor, at the 1952 Fall Dinner Meeting for Superintendents and Foremen, Contractors Association of Western Pennsylvania, Pittsburgh.

AS you all know, today the tendency is to replace such time-honored equipment as materials hoists and some steel erection derricks with portable cranes. Among the advantages of the portable crane we find the ability to move materials from the point of delivery directly to the point of application in one material handling operation.

An outstanding example would be concrete building construction, where concrete is lifted in a crane bucket and poured directly into 14th floor forms. For this purpose booms have grown to a length of 165 ft. Another example is heavy construction such as roads, viaducts, bridges and dams where the portable crane with its numerous attachments has become versatile.

As the number of cranes increased and their booms grew longer, the frequency of contact with high tension wires also increased. Many times there is no choice but to perform work directly over, under or alongside live wires. This all adds up to a serious electrocution hazard. On the one hand, we must recognize that the operators of cranes are fully responsible persons with plenty at stake if an electrocution occurs. On the other hand, however, we must also face the fact that all humans are accident prone to some degree and it follows that a simple warning to "Keep away" from live wires is woefully inadequate. I do not know what the record is in the State of Pennsylvania, but I do know that in New York State we have suffered some 30 electrocutions in addition to numerous cases of severe burns and shock in the past three years. Consequently, the one really safe method is to ground, effectively, cranes which operate in the vicinity of high tension wires. The demonstration, I believe, will make clear what is to be accomplished in grounding but there are about five important points which are to be observed in an actual field installation. I shall request you to keep these in mind.

1. If a large water main or other conductive substructure is available by all means use it in preference to driven grounds.

2. If driven grounds must be used, choose the point of lowest elevation within the reach of the cable. It is here that the soil will be most moist, hence better contact with the earth will result.

3. Always use a cable which is larger in cross-section than the wires which the crane may strike. The demonstration will disclose the importance of this.

4. Proper terminals securely bolted or clamped to flat, file cleaned surfaces are necessary to keep the resistance to a low value.

5. It is desirable that all grounds be tested. This is particularly important in the case of driven grounds. The electrical resistance of the entire ground assembly should never exceed 5 ohms.

The New York State Department of Labor furnishes ground testing service to contractors upon inspection and also upon request. For this purpose, we have acquired two Megger Ground Testers of the type displayed with the demonstration.

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New Technical Literature

Compaction bulletin brought up to date

Bulletin No. 58, entitled "Compaction of Embankments, Subgrades, and Bases," has been revised and is available on request to the Highway Research Board, 2101 Constitution Avenue, Washington 25, D. C.

A continuing interest in compaction as indicated by investigations and development of new equipment has made it desirable to summarize, insofar as is practicable, what is known on the subject. This publication presents the fundamental principles of compaction and also how compaction is used in design and construction of roads.

Different parts of the road structure require compaction for different purposes and thus may require different degrees of densification for similar soils. Those requirements are discussed in the light of practicable and economical limits of field compaction. Different types of available compaction equipment may require that thought be given to selection of the equipment best suited to the job. The text discusses not only selection of rolling equipment but also the use of auxiliary equipment. Field control of compaction is discussed in some detail.

Bulletin 58 gives broader coverage on current compaction practices than have previous bulletins. Also it presents, for the first time, tabulated data on manufacturers specifications for compaction equipment. The broad coverage, the many illustrations and charts, and the wealth of tabulated data should make this bulletin of use to inspectors, designers, specification writers, as well as to soils specialists.

Compressed air in industrial production

"Compressed Air Power in Industrial Production," prepared by the Committee on Engineering Education of the Compressed Air and Gas Institute, has just been released. This pamphlet with 63 illustrations is the third in a series of engineering studies in the Institute's educational program for which it received the ATAE Award of Merit in 1952.

The first two pamphlets were: "Compressed Air Power," a general treatise on compressed air equipment; and "Compressed Air Power in Construction," a comprehensive study of air-operated tools and equipment used in the construction industry. Both booklets have already gained wide acceptance in educational institutions, industrial plants, engineering organizations, government bureaus, and libraries.

"Compressed Air Power in Industrial Production" is directed to designers, engineers and production men in industrial plants. The booklet discusses pneumatic tools and aids to production, so that these men may be better able to evaluate the usefulness of pneumatic equipment. In so doing, they will be in better position to design and/or install production equipment which will result in the most economical operations utilizing compressed air power.

New reference on foundation engineering

The basic information required for the selection, design, and construction of substructures is presented in "Foundation Engineering" by Peck, Hanson and Thornburn, a new book published by John Wiley & Sons.

Emphasizing types of foundations met in everyday practice, the authors provide material that will be of use in investigating and evaluating subsurface conditions, selecting the most suitable types of foundations for a

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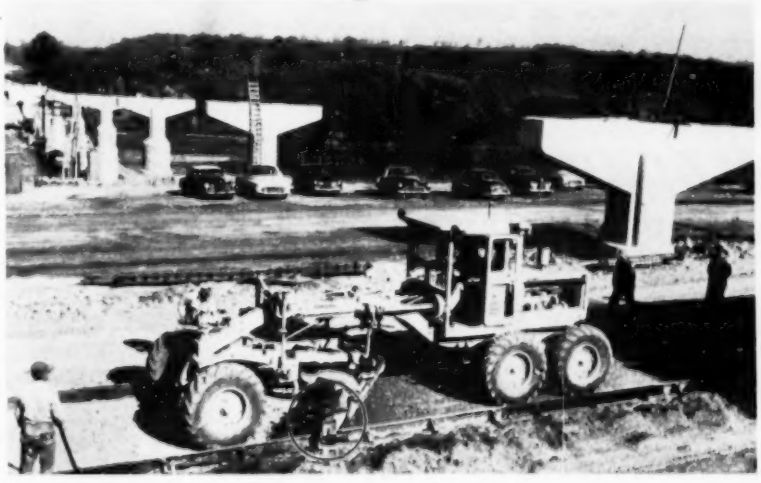

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given site, judging the performance of each type in service, and designing the structural elements of the selected type. This material is introduced with a survey of the properties of subsurface materials and goes into the identification and properties of soils and rocks. The following discussion on various foundation types and methods of construction includes such topics as excavating, bracing, drainage, shoring, and underpinning.

Foundations on sand, clay, silt, loess, and non-uniform soils are considered in a section dealing with selection of foundation types and basis for design. The book covers the structural design of individual column and wall footings, footings subjected to moment, combined footings and rafts, and retaining walls and structures.

Ralph B. Peck, research professor of soil mechanics at the University of Illinois, is co-author with Karl Terzaghi of "Soil Mechanics in Engineering Practice," published by Wiley in 1948. An engineer of bridges and traffic structures, Walter E. Hanson is with the Illinois Division of Highways. Thomas H. Thornburn is also at the University of Illinois as research associate professor of civil engineering.

"Foundation Engineering" contains 410 pages and is priced at $6.75, payable to John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

Collects $1,000,000 on parking meters

Chicago motorists paid $1,060,000 in parking meter charges during 1952 according to a year-end report. They also inserted several thousand other items including slugs, washers, foreign coins, hairpins and play money, this collections are under jurisdiction of the Department of Streets and of Sanitation instead of the City Collector.

McCormick Appointed Sales Manager. Robert H. McCormick has been appointed Sales Manager of Master Vibrator Co., Dayton, O.

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- Depths accurately controlled, hydraulically.
- Cutters furnished in 6″ to 20″ widths. Easily changed to suit the job. Special cutters for tough soils and frozen ground.
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Misrepresentation Justifies Rescission

By Albert Woodruff Gray

A lawsuit came before the Connecticut Supreme Court a few weeks ago brought by the state against a contractor and the surety on the performance bond, for breach of contract in a road construction project.

The plans and specifications of the state for the preparation of bids included the item, "Unclassified excavation * C Y * 125,983." Borings previously made for determining the character of the material to be excavated showed the rock cut would run to 38,772 cubic yards.

The contractor assumed, erroneously, that no solid rock was involved and that this excavating could be performed with earth moving equipment. Consequently his bid was based on an estimate of 29 cents per cubic yard while the fair price for rock cut would be a minimum of $1.50.

When the bids were opened this contractor whose bid was the lowest, learned for the first time that the work involved rock excavation and sought to withdraw his bid. During these negotiations the State Director of Engineering repeatedly assured this contractor that the rock to be cut amounted to 38,000 yards.

Relying on this assurance the contractor undertook the contract. After 39,000 yards of rock had been excavated and 70,000 more still remained to be excavated the contractor attempted to secure a revision of the contract price. Unable to do so he rescinded the contract and ceased work.

The state sued to recover the damages for what it claimed to be a breach of this construction contract. In his defense the contractor set up a counterclaim for the reasonable value of the work he had performed under this agreement prior to his rescission, less whatever payments had already been made to him.

Awarding judgment to the contractor for the value of the work that had been performed the Connecticut court said,

"The positive assertion that the drawings showed the amount of rock which would have to be cut and that it totalled 38,000 cubic yards, was a representation upon which the contractor had a right to and did rely. The contractor was under no obligation to show that the misrepresentation was intentionally made. It was implied if the representation went to the root of the contract and induced the company to execute the contract. Under these circumstances the contractor had a right to rescind within a reasonable time and to recover damages based on that rescission."

REFERENCES

State v. Hartford Accident & Indemnity Co., 84 A. 2d 579, Connecticut, November 1951.

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- Precision engineered, quality built features cut down-time loss . . . assure maximum output everyday.

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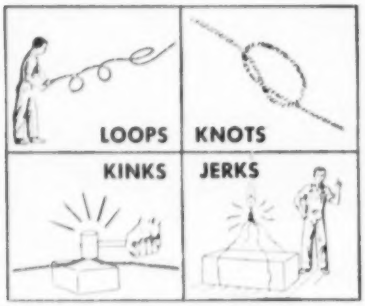

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ARBA Meeting at Boston

(Continued from page 72)

The planners are faced with deciding what kind of a city we want in the future and what kind we can afford to have. Decentralization seems the only long-range answer.

A. T. Goldbeck, Chairman of the ARBA committee on rigid pavement design and Engineer-Director, National Crushed Stone Association, gave a summary of state road practice, followed by specialized reports by E. W. Bauman, Managing Director, National Slag Association, and Frank B. Brown, Managing Director, Wire Reinforcement Institute. In a survey report representing 41 states, Brown noted that most concrete highway pavement today is built 8 or 9 inches uniform thickness, with no states longer employing the old thickened edge design. Thirty-eight states specify transverse expansion joints, and 32 states load transfers at transverse joints. Slab lengths vary from 15 feet (10 states) and 20 feet (6 states) up to 75 to 100 feet in a few states. Welded wire reinforcement is permitted or required in 31 states, bar mats in 19 states, expanded metal in 2 states.

Prevailing widths of arterial road pavement are 22 or 24 feet, with an increasing number of states requiring a third or fourth truck-passing lane on hills.

Trends in flexible pavement design were reviewed by Col. Walter F. Winters, Chairman of ARBA committee on this subject and Chief Engineer, The Asphalt Institute. Mr. Winter's paper emphasized the importance of such developments as rubber-tired rolling to secure greater densities in pavement layers, and other developments which are giving increased durability to hot mix asphalt concrete pavements under heavy traffic.

A symposium on the use of rubber in bituminous pavements closed this session, with Harold F. Clemmer and N. G. Smith of the District of Columbia and L. E. Gregg, Kentucky Department of Highways, telling of latest developments in rubber-road research

The Massachusetts expressway program was described by John McCloskey, Executive Assistant, Massachusetts Department of Public Works. The state has recently voted bonds totaling $400 million, which, together with other funds, has greatly speeded construction of arterials. These include an outer belt around greater Boston (Route 128) now open as a limited access expressway for 48 miles. This road, located about 14 miles out from downtown Boston, is costing about a million dollars a mile, and has attracted immediately a traffic volume double that predicted.

The Master Plan for Boston, under the state program, will include an inner hub or belt circling the downtown about 3 miles out, and several limited access radials.

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- **Sharper Bends Over Small Sheaves**
- **Angle Pulls Through Swiveled Sheaves**
- **Crawling on Guide Roll Flanges**
- **Heavy Line Pull . . . Rapid Line Speed**
- **Multiplied Shock of Load on Slack Line**

Tuffy Scraper Rope is ready to mount on your reel spindles. Just remember the name Tuffy, the diameter and the length. That's all you need to know to order *Tuffy!*

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Specialists in Wire Rope and Braided Wire Fabric
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By_____ Title_____
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C-4

Bituminous ROADS AND STREETS

Published by Gillette Publishing Company
33 West Maple Street, Chicago 10, Illinois

Cover Scene

Asphaltic concrete section recently completed on Route 2, near Shelburne, Massachusetts, under that state's $400 million bond program.

58-Mile Desert Job in One Contract

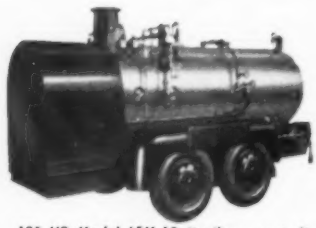
Old Mat Scarified by Heavy Discs Under Grader

How Virginia Reworks Bituminous Pavements

MARCH, 1953

Cleaver-Brooks EQUIPMENT
for Steam . . . Hot Water . . . Heat

SELF-CONTAINED STEAM BOILERS



125 HP Model LFM-12 (trailer mounted)

MOBILE — PORTABLE

Portable steam for Asphalt, Ready or Hot-Mix Plants, Rock Asphalt Heating, Aggregate Drying Storage & Tank-Car Heating, Pile Driving, Winter Concrete Curing. Trailer-mounted for easy towing. Skid-mounted for installation on your truck or trailer. A.S.M.E. Code constructed. All-season usefulness, all-weather protected.

SPECIFICATIONS

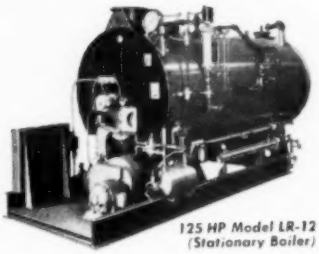
MODEL	LFM-8	LFM-12
Approx. Boiler horsepower	80	125
Approx. rated capacity lbs. of steam per hour (212° F)	2760	4300
Weight of normal water capacity lbs.	3770	4860
Capacity of Fuel Oil Tank, gals.	85	115
Capacity of Gasoline Tank, gals.	5	30
SKID MOUNTED		
Overall length	14' 8"	16' 4"
Overall width	5' 6"	6' 0"
Overall height	6' 6"	6' 10"
Approx. shipping weight, lbs.	10,000	14,410

TRAILER MOUNTED (dual wheels)	LFM-8	LFM-12
Overall length	17' 9"	19' 10"
Overall width	8' 0"	7' 11"
Overall height	7' 9"	8' 6"

TRAILER MOUNTED (tandem wheels)	LFM-8	LFM-12
Overall length	17' 9"	19' 10"
Overall width	7' 0"	7' 6"
Overall height	7' 9"	8' 5"
Approx. shipping weight, lbs.	14,000	18,000

STATIONARY

Shipped as a complete, ready-to-operate self-contained unit. For Asphalt Plants, Oil Bulk Stations, Ready-Mix Concrete and Concrete Block and Cast Products Curing Plants. Finished and tested under actual loads. Approved safety devices. Designed to A.S.M.E. Code. Hartford Insurance inspected and approved. Fast steaming, 80% efficiency —full load down to 30% rating. Low-fire start saves fuel. Burns oil, gas or combination oil or gas. Sizes: 15 to 500 HP; 15 to 250 psi.



125 HP Model LR-12 (Stationary Boiler)

SPECIFICATIONS

Boiler Horsepower—125

Lbs. Steam per hour from and at 212° F.—4,300

BTU Output, 1,000 per hour —4,180

EDR Steam Gross—17,370

EDR Steam Net, HP and A.C.C.—17,300

"Deuce"—15 HP, 125 lb. W.P. oil-fired boiler and 1A Booster

PORTABLE PUMPING BOOSTER

Withdraws pumpable bitumens from tank cars. Heats by direct firing, recirculates, then delivers directly to distributor. Raises temperature 50° F. per hour. Larger, electric motor-driven unit available for stationary use.

SPECIFICATIONS

NO. 1A PUMPING BOOSTER
Operating burner at full cap. and pumping material:

Approx. 300 G.P.M. temperature rise	25- 35° F.
Approx. 180 G.P.M. temperature rise	45- 55° F.
Approx. 100 G.P.M. temperature rise	85- 95° F.
Approx. 50 G.P.M. temperature rise	170-180° F.

Heats 10,000 gal. car 35-45° F. per hour.

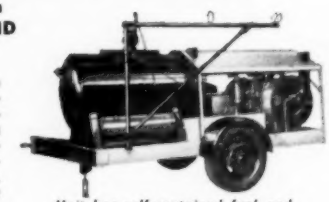
NO. 2AA PUMPING BOOSTER
Operating burner at full cap. and pumping material:

Approx. 350 G.P.M. temperature rise	45- 55° F.
Approx. 206 G.P.M. temperature rise	80- 90° F.
Approx. 112 G.P.M. temperature rise	110-120° F.
Approx. 60 G.P.M. temperature rise	200-210° F.

Heats 10,000-gal. car 55-65° F. per hour.

"DEUCE" Combination TANK-CAR HEATER AND PUMPING BOOSTER

"Deuce" pre-heats to pumpable consistency, circulates and heats to application temperature—then pumps and loads distributor. A.S.M.E. Code constructed. Four-pass boiler, equipped with condensate pump, is mounted on same frame with direct-fired booster and asphalt pump.



Unit has self-contained fuel and gasoline tanks.

Operating Burner at Full Capacity and Pumping Materials

Approx. 300 G.P.M. Temperature rise	25- 35° F.
Approx. 180 G.P.M. Temperature rise	45- 55° F.
Approx. 100 G.P.M. Temperature rise	85- 95° F.
Approx. 50 G.P.M. Temperature rise	170-180° F.

Heats 10,000 gallon car 35-45° F. per hour.

SPECIFICATIONS

	Skid	Trailer
Overall length, in.	159	185
Overall width, in.	66	81
Overall height, in.	71	90
Shipping weight, lbs.	6350	7080

Available in 2 sizes, skid-mounted

PEAK-TEMP OIL BOOSTER

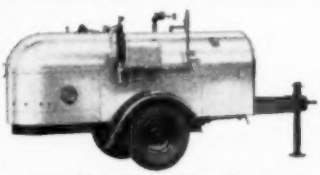
Heavy-duty, fully automatic booster uses high-flash-point oil as heat transfer medium to raise and maintain bituminous and heavy viscous materials to application temperatures. Fired by pressure-atomizing oil burner. Self-contained—ready for service line hookup.

SPECIFICATIONS

	Model 1201	Model 1801
Overall length, in.	145	169
Overall width, in.	66	66
Overall height, in.	78	96
Shipping weight, lbs. (approx.)	6100	7000
Burner Capacity (Maximum)	12 gph	18 gph

MOBILE TANK-CAR HEATER

Compact oil-fired boiler for operation at 125 lbs. W.P. Four-pass, down-draft, A.S.M.E. Code constructed. Uses fuel oil to and including Commercial No. 2. Has other year-round applications: Steam cleaning, culvert thawing, etc.



Available in Two or Three Car Sizes

SPECIFICATIONS

TWO-CAR HEATER, 28 BHP	Trailer	Skid
Overall length, in.	162	126
Overall width, in.	60¾	36½
Overall height, in.	69	53¼
Shipping weight, lbs.	4000	3900
THREE-CAR HEATER, 42 BHP		
Overall length, in.	164	127½
Overall width, in.	67	42
Overall height, in.	79½	59¼
Shipping weight, lbs.	4800	4500

Write for Catalogs and Complete Details

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Pioneers and originators of self contained boilers, Tank-Car Heaters and Bituminous Boosters

Barber-Mixall Greene

MODEL 804

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MIXES ALL THE HOT PATCH YOU NEED, ANY TIME, ANYWHERE, ANY WEATHER

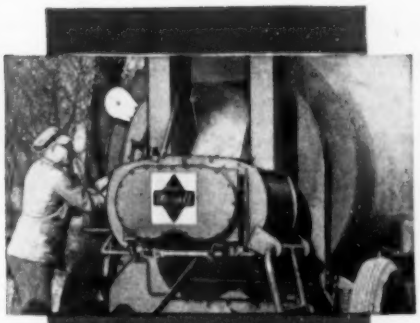
Now, the new Barber-Greene Mixall gives you the opportunity to offer high quality bituminous paving for driveways, sidewalks, service stations, industrial plants, parking lots . . . and other "black top" jobs at new low costs.

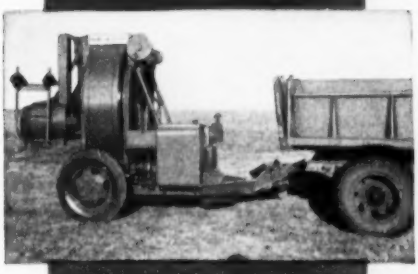
The Mixall, a completely new, compact and portable small-job maintenance and paving mixer, will produce up to 5 t.p.h. of any type hot mix . . . up to 10 t.p.h. of cold mix . . . will produce low slump Portland cement mixes. Built to be towed behind the aggregate truck for on-the-spot mixing, the Mixall is just as well suited for central plant or stock pile operation. The Mixall can work in any weather . . . even drying frozen aggregates.

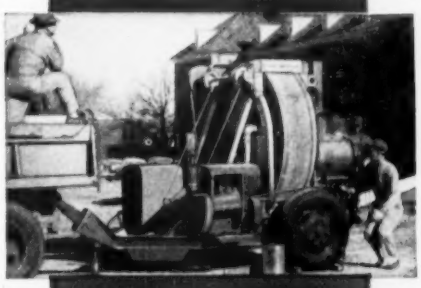
Think of what you could do with the new B-G Mixall in your territory. Then see the Mixall at your first opportunity . . . or write for full information.

THE ONLY SMALL JOB MAINTENANCE MIXER WITH...

- ROTARY DRUM DRYING: The same principle used in largest B-G Continuous Dryers.
- TWIN SHAFT HEATED PUGMILL: "Kneading" action assures even coating of every aggregate particle.
- POWER SKIP HOIST: Only 14" high for easy charging.
- HIGH DISCHARGE: Can discharge directly into place, into wheelbarrows or gas buggies.

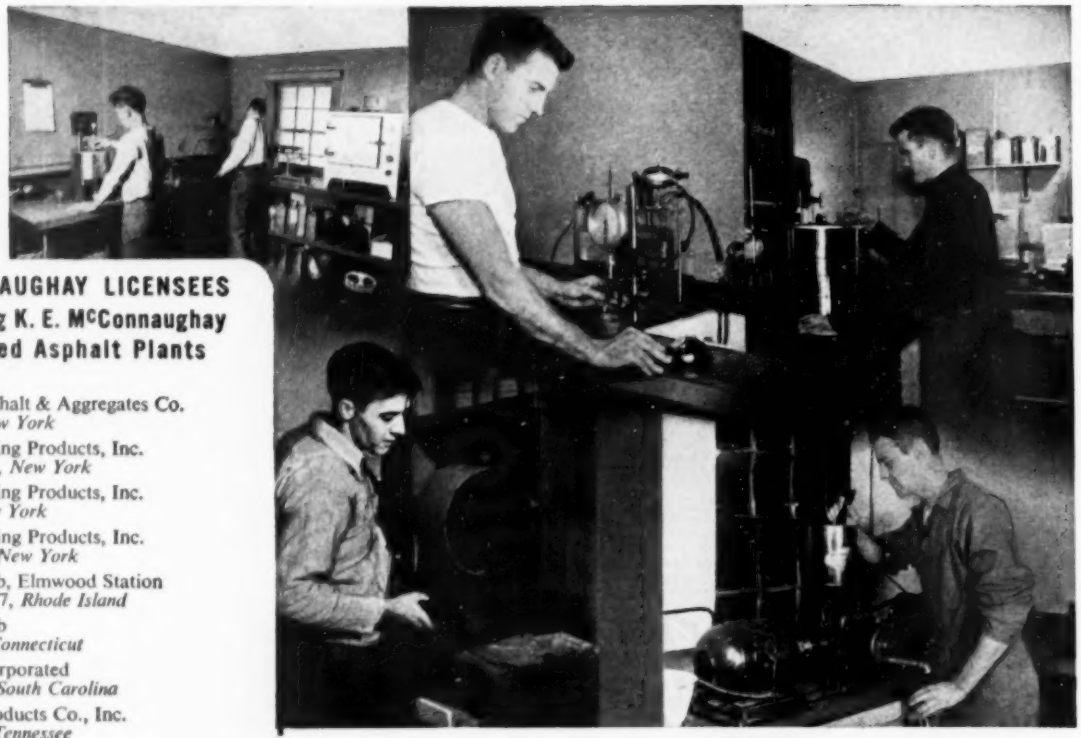






Barber-Greene

Aurora, Illinois, U. S. A.



McCONNAUGHAY LICENSEES
Operating K. E. McConnaughay
Emulsified Asphalt Plants

Albany Asphalt & Aggregates Co.
Albany, *New York*

Knight Paving Products, Inc.
Gardenville, *New York*

Knight Paving Products, Inc.
Ithaca, *New York*

Knight Paving Products, Inc.
Rochester, *New York*

C. C. Plumb, Elmwood Station
Providence 7, *Rhode Island*

C. C. Plumb
Hartford, *Connecticut*

Seaco, Incorporated
Columbia, *South Carolina*

Asphalt Products Co., Inc.
Nashville, *Tennessee*

E. A. Mariani Co.
Tampa, *Florida*

Emulsions, Inc.
Lawrenceville, *Illinois*

Walsh & Ikeler
Gary, *Indiana*

Ready-Mix Asphalt Inc.
Ft. Wayne, *Indiana*

Fauber Construction Co.
Lafayette, *Indiana*

Brookman Construction Co.
Muncie, *Indiana*

Bituminous Materials Co.
Terre Haute, *Indiana*

Wabash Valley Asphalt Co.
Terre Haute, *Indiana*

Asphalt Materials and Construction, Inc.
Indianapolis, *Indiana*

Pan-Am Southern Corporation
New Orleans, Louisiana
(Also serving Alabama and Mississippi

Doherty and Swearingen Co.
Yarmouth, *Maine*

Berkshire Asphalt Co., Inc.
Springfield, *Massachusetts*

James Huggins & Son, Inc.
Malden, *Massachusetts*

Bituminous Materials Co.
Jackson, *Michigan*

Midwest PreCote Co.
Kansas City, *Missouri*

Eastern Representative:
John A. Dow
801 Second Ave.
New York 17, N. Y.

Export Representative:
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545 Fifth Avenue
New York 17, N. Y.
and
214 The General Scott
No. 1 Scott Circle, N. W.
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This Extensive *McConnaughay* Research Laboratory . . . *Plus*

23 FIELD TESTING LABORATORIES

Assure You of the Best Emulsified Paving Asphalt for Each Specification

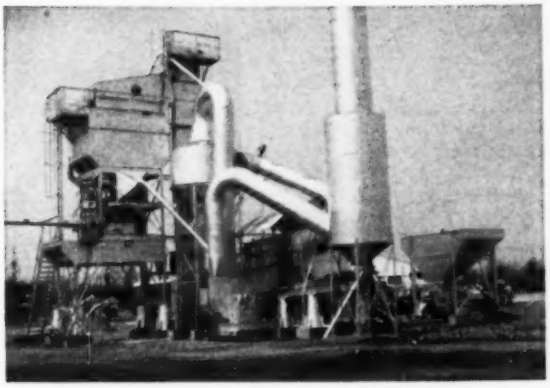
There are many reasons for the remarkable success of McConnaughay Emulsified Asphalts on paving jobs throughout the country. For example, the extensive research laboratory (partially illustrated above) directs the efforts of all McConnaughay Licensee plants, each of which has its own field testing laboratory. In cooperation with contractors, producers and highway engineers, these laboratories develop the best possible paving processes to meet the requirement of each type of construction . . . carefully adapted to local aggregates, soil conditions, and weather patterns.

Result: McConnaughay Emulsified Asphalts pass all specifications of federal, state, county, and municipal public works departments . . . as well as those of the American Association of State Highway Officials, the American Society for Testing Materials, and the Asphalt Institute. For your emulsified asphalt needs, contact the nearest McConnaughay Licensee (list at left) or get in touch with . . .

K. E. McCONNAUGHAY
EMULSIFIED ASPHALT
Plants and Processes
LAFAYETTE 4, INDIANA

Contractors Are Making Highway History with Dependable, Profitable

CUMMER ASPHALT PLANTS



The Cummer Asphalt Plant pictured here, owned and operated by Asphaltic Concrete Co., Rochester, N. Y. consistently produces 80-100 tons per hour (based on 5% initial water content, dried to within ½ of 1% and heated to 350° to 400°F.)

Located in a congested area, this complete plant is equipped with dust elevator, washer, enclosed hot elevator, and is electrically powered. Each unit is individually driven.

•

FAMOUS CUMMER ASPHALT PLANTS, ruggedly built for years of service, are designed to increase the profit and efficiency of your highway construction operations.

Consider these superior CUMMER features:

Mixing towers with vibrating screens and mixer.
Dust collector discharging reclaimed dust into hot elevator.
Two furnace combustion with low pressure burner equipment.
Cold storage bin and feeder.
Enclosed hot elevator.
Diesel or electric power.

CUMMER PLANTS—complete with all motor and starter switches—are available in sizes from 55 to 100 tons per hour

Send for your copy of the descriptive Cummer Catalog today

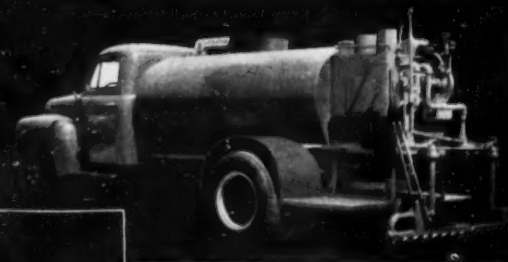
THE F. D. CUMMER & SON COMPANY

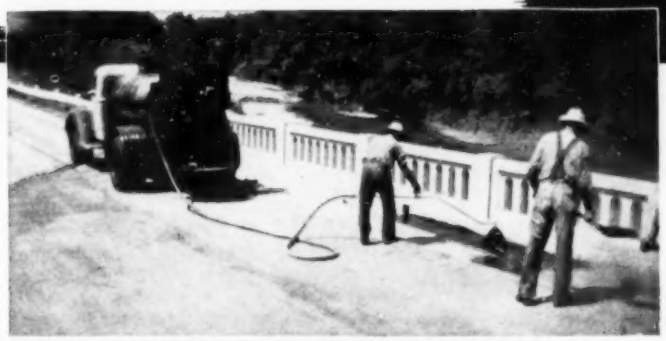
Pioneer Builders of Fine Asphalt Plants

CLEVELAND 14, OHIO

Want to S-T-R-E-T-C-H your maintenance dollar?

101 UTILITY SPRAY TANK





You'll need a 101 Utility Spray Tank to do it! Because here's a combination of 3 Units all done up in one package. The Model 101 is designed to give Highway Departments and Contractors a Utility unit that will do a variety of road maintenance jobs economically. The 101 Utility Spray Tank has a Spray Bar for small application work, Hand Spray Attachment for patch work and Pouring Pot Outlet for crack filling work. This 101 Utility unit will handle Asphalt, Tar Emulsion, Road Oil and Cut-Back. Has a fast heating system with Vaporizing Torch Type Burners. The 101 is made in both Truck Mounted and Trailer Mounted Models, sizes ranging from 400 to 1000 gallons. If you want your maintenance dollar to stretch here's the unit for the job. For further details write for Bulletin No. 5.

BLACK TOP ROAD MAINTENANCE EQUIPMENT — LB — SINCE - 1900

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VIEWS AND COMMENTS

By H. G. Nevitt

Some Things Can Be Done

The most deadly war we are fighting is not in Korea but on our highways. Our enemies are indulgence, irresponsibility, and incompetence. In neither will we be victorious until we have realistic thinking and strong action under good leadership.

There are many ideas on how to stop the carnage on our highways. It is our personal view that for real accomplishment we must revise our basic concept on the use of the motor vehicle. Instead of the idea that anyone (within obvious limits, such as age) who can afford to buy one has the inherent right to drive it, we must instead consider this a privilege granted only to those who have clearly demonstrated the competency—both in physical attributes and temperament—and the responsibility that the control of such dangerous equipment demands. Until measures reflecting this view point appear and are supported by the public due to conviction that it is correct, we believe alleviation rather than cure is the best that can be expected.

Two General Conclusions

The proposals to improve highway safety cover a wide field, and vary from minor and easily accomplished steps to those of such magnitude and cost that much time will be required for them. Out of the welter of ideas on the subject two conclusions seem generally held. One is that the majority of accidents can be escribed to driver failure, and the cure must take cognizance of this: it is not possible to build foolproof highways, and the traffic must move. The other is that, where the source can be eliminated by practicable construction or maintenance measures, such must be taken. These include projects of such magnitude that our means do not permit immediate completion, merely their inclusion as a part of the basic highway program. But also among these are steps which can be readily and quickly taken. Outstanding among these are the elimination of skid-conducive sections and accident-prone shoulder conditions.

We recently had the doubtful pleasure of driving across a mid-western state during a rainy spell. Most of the drivers moved along at a good pace, blithely unaware that they were probably exceeding the limiting braking velocity for the surface and that Moyer would find its wet coefficient of friction very much in the danger range. We on the contrary, perhaps too readily aware of these possible facts, progressed with care and trepidation. It is our belief, probably warped by the experience, that if tests were made of the roads travelled (as was done by Virginia in an excellent study some years ago), over fifty per cent of the surfaces would show up as definitely dangerous in wet weather. Evidently this particular state is either not getting good construction from this standpoint or is at fault in its sealcoating operations.

We believe it incumbent upon every highway authority to test its surfaces—or, at least, those which might be dangerous—and to adopt sealcoating methods which will maintain—rather than merely give initially—reasonably skid-resistant surfaces. No one seems willing to contest that the full benefits possible from sealcoating can be obtained at negligible increase in cost over any commonly advocated method, and that sound use of available funds demands this. We hold strong views as to what must be done for this end—a rational approach, close agregate gradation and control, the correct bitumens, and much more careful procedures on the job than are now used—and question whether many organizations are meeting all the requirements. However there are many ways to at least obtain a reasonably safe and enduring non-skid surface, and we feel that this at least should be insisted on.

Inexcusable Shoulders

We recently read of two deadly accidents in which innocent people were killed as the result of a head-on collision with a car which had gone into a skid due to bad shoulder conditions. Anyone who travels widely knows that there are miles of dangerous shoulders, particularly along portland cement concrete slabs, which could be quickly corrected if the highway authorities were determined to do so. The many states which have eliminated this hazard for the average driver offer convincing evidence of this. There are too many ways to correct this condition—or, at least, temporarily eliminate it pending permanent action—to justify the continuance of any condition at all conducive to acidents.

Many are in favor of almost any step that will stop the casualties in Korea. These same people often will not, however, control their own driving—or, and perhaps more critically, that of their children, to stop highway casualties. In spite of this common situation our highway authorities should make certain they are doing everything possible for safety. Their record is generally one of outstanding devotion to the public service—though usually unappreciated and poorly rewarded. They make an exceptional showing in comparison with private concerns presumably better served due to their motive of self interest. To meet these demands as effectively as needed may be difficult, but it can and should be done.

•

Frank Olmstead heads Asphalt Technologists

Frank R. Olmstead, U. S. Bureau of Public Roads, was elected president of the Association of Asphalt Paving Technologists at the Association's annual meeting, Houston, January 26-28. Francis N. Hveem, California Division of Highways, was elected first vice president, and Arnold J. Hoiberg, Lion Oil Company, second vice president.

Directors for the year include the above officers and directors-at-large C. A. Carpenter, U. S. Bureau of Public Roads; Robert G. Clark, New Mexico Highway Department; retiring president Norman W. McLeod, Canadian Department of Transport, and past-president John H. Goshorn, The Asphalt Institute.

★ (Left): The first step in widening. Caterpillar motor grader daylighted the gravel shoulder to get 3 in. depth alongside the old pavement. (Right): An Apsco pavement widening machine placed the widening strip with a lean asphalt mix

58-Mile Desert Job in One Contract

How Carl E. Nelson Co. handled record-length Nevada project. U.S. 95 face-lifting included widening and resurfacing with plant mix. Five plant set-ups and 360-mile asphalt haul required.

THE Nevada state highway department has tackled in one 57.73-mile contract what is believed to be the longest single asphalt road construction job ever let in the United States. For $574,184.75 the Carl E. Nelson Co. of Logan, Utah, contracted to widen the vast stretch of Nevada's north-south highway north of Las Vegas beyond the atomic proving grounds at Camp Desert Rock, and to resurface the widened highway with hot plant mix.

The dicision to do the job in one contract was governed by several controlling factors. First and most important was the fact that the old 18-ft. roadmix bituminous pavement was dangerously narrow to carry the high traffic volume now shuttling back and forth between Las Vegas and the atomic proving ground. As a second consideration, the alignment was excellent all the way—the old road was built in the early 1930's on the old Las Vegas & Tonopah Railroad bed—and the surface showed no indication whatever of base failure. The job was needed all at once and urgently, so Nevada's engineers decided to let the big 154,000-ton plant mix project in the single contract.

Elements of Job

The job was planned so traffic could be carried through each day's operations, and the start of construction was slated for the north end of the job near Beatty. This schedule permitted work to continue with as little interference as possible with nuclear tests planned for the secret weapons ground near Desert Rock and the Frenchman Flats area.

The original section as constructed was built with 2½ in. of roadmixed bituminous material on a 2½-in. gravel base, then considered suitable for this moderately dry desert country. Present rehabilitation work calls for no increase in granular base. The entire 58-mile section is being widened by daylighting the shoulder material away from the old mat, and adding 3 in. of plant-mix base material, incorporating 3½ per cent of 120-150 asphaltic cement.

The existing shoulders were not in all cases uniform, so the specifications carried provisions for the contractor to add extra material in sections where such material was needed. A total of about 4 miles had to be built up by this method.

The riding surface design calls for 2 in. of plant-mix paving, followed by a surface treatment course consisting of asphalt and ½-in. chips. To hold the armor chips, about 0.35 gal. per sq. yd. of penetration-type asphalt emulsion is to be used.

Mineral filler and asphalt requirements for the surface course are as follows:

SIZE SIEVE	PER CENT PASSING
1-inch	100
¾-inch	80-100
No. 4	42-70
No. 10	27-50
No. 40	15-30
No. 200	5-12
120-150 asphaltic cement	5.35 per cent

Specifications for the widening material were the same except that 3½ per cent of asphalt was used.

One of the most interesting aspects of the job was the way its length favored excellent construction organization by Carl E. Nelson Co. Only

★ Barricades and a flagman, along with a pilot-car jeep, carried traffic safely through the daily construction section

180 calendar days were allowed for completion of the 154,000-ton project, so even from a theoretical angle it was necessary for the organization to complete something like 2,000 feet of highway per day.

Contractor's Set-Up

Controlling factors in the organizational scheme included five set-ups for the rock crushing and asphalt plants, and a 720-mile round-trip haul to bring the asphalt in by trucks from the Douglas Oil Co. refinery at Paramount, California. Another factor of importance was the selection of equipment to lay the widening strip, because with the exception of gravel widening with motor graders by State maintenance crews, Nevada had never before attempted to lay a controlled widening strip on such a long project.

Each part of the organization had to dovetail its work perfectly to make the job go along without a hitch.

How It Was Done: Work began officially on October 18, 1952, when the crushing plant was erected in its initial location near the north end of the job. Just as soon as a supply of aggregates and plant-mix mineral was accumulated, the following sequence of operations was started:

1. **Preparation:** In sections where additional material was necessary to build up the shoulders, it was trucked in direct from the rock plant by a fleet of International L-190 and KB-8 trucks, hauling about 15 tons per load. The material was laid in and bladed to a rough section prior to any widening operation.

2. **Widening:** Gravel shoulder material next to the old mat was next daylighted to a uniform depth of 3 in. by the 12-ft. blade on a Caterpillar No. 12 motor grader. This material was simply rolled aside temporarily until the widening and paving were complete. Traffic during this phase was controlled by a flagman, by barricades, and by a pilot car which alternately led north and southbound traffic through the active part of the job. Working with and directly behind the motor grader was a small Buffalo-Springfield 5-ton tandem roller, which compacted the bladed gravel just ahead of the widening strip. In most cases the motor grader and roller stayed tightly closed up within 300 ft. or so, and they were closely followed by the next phase of this operation.

★ Cedarapids rock crushing and screening plant worked 5 locations to make the necessary mineral aggregates for plant mix and chips

The 3-in. plant-mix widening strip was laid by an Apsco widening machine, which took mix material from the fleet of trucks and laid it down at the rate of 2 to 2½ miles per day on one side of the highway. As far as the accuracy of the machine was concerned, it was excellent according to Nevada engineers. The first 12,000 tons of widening material checked to within 19 tons of the theoretical amount — remarkable accuracy to within a fraction of one per cent, resulting from accurate estimating of quantities, close check on load sizes, and excellent spotting, spreading and checking on the job.

Emulsion Fog Prime

When both widening strips were completed, the entire roadway surface was broomed and primed with a 0.1 gal. per sq. yd. fog application of mixing type asphalt emulsion, cut with 300 gal. of water per 700 gal. of emulsion. This material was trucked in from the Douglas refinery in California, and was applied by a Lang distributor. It soaked into the old pavement and the widening strip very nicely, and could be opened to traffic immediately.

3. **Plant-mix Paving:** The 2-in. plant-mix roadway surface was then laid by a Barber-Greene finisher, which had been field-widened to lay a 13-ft. lane. Widening was done by extending the auger-feed shaft, and installing a heavy outboard bearing to take the extra thrust.

The machine took its material from the fleet of 6 International trucks, each hauling from 10 to 18 tons of mix, and laid the first course to a stringline established by the survey party. In any day's run, the finisher worked the first half of the shift in one direction (usually south), and moved back the last half of the shift to complete paving in the other direction. The machine was then moved ahead for the next day's run sometime during the night.

A Buffalo-Springfield 3-axle tandem breakdown roller made the initial compaction pass, followed immediately by the smaller Buffalo 5-ton machine.

Much of the work was completed during the cooler winter months, permitting the rollers to stay up tight against the finisher. Pavement lanes were opened to traffic as soon as the 5-ton roller finished its work.

Paving runs as high as 3,200 ft. of 2-lane roadway in a 9-hour day were not uncommon. The crew was having little trouble in laying from 850 to 1000 tons of mix per shift at the time the job was visited. The advent of warmer weather was expected to bring double-shift work on all operations including the rock crushing.

★ (Left): Widening strips in place; surface has been broomed and shot with a light coat of asphalt; first lane of pavement going down

★ (Right): A typical rolling sequence. Breakdown by the Buffalo-Springfield 3-axle tandem; final compaction rolling by 5-ton machine in the foreground

★ One of the toughest problems to solve was how to make a construction joint at the end of a day's work which wouldn't bond so tightly that the whole pavement would have to be picked loose the next day. Problem finally solved with paper strips

★ The highway widened and repaved. Grader is doing the final step; bringing back the shoulder material to make a smooth, workmanlike job

Special Chip Spreader

4. **Seal or Armor Coat Work:** The asphalt and chip seal-coat was applied in part by special equipment, consisting of a shop-built spreader box mounted on a halftrack truck. Built by Nelson's mechanics at the Logan, Utah, yard, it consists of a hopper for truck dumping, a conveyor for taking the chips to the front of the machine, and an 18-in. screen on the front to separate the material and place the bigger chips ahead of finer particles. Chips were spread by this machine immediately following the asphalt application, which was subcontracted to Oilfield Supply Co. of Bakersfield, Calif. This firm hauled the asphalt from California and applied it with its own distributor.

5. **Finish Shouldering:** Finish work behind the plantmix surface consisted of pulling the excess gravel up to the plantmix edge, dressing off the top, and rounding out the backslopes. Although the specifications were not written too tightly around this item, an unusually excellent job was done. The Nelson outfit brought in a skilled motor grader operator, who went out of his way to leave a beautiful job.

Ample Plant Capacity

Plant Setups: Both the rock crushing plant and the hot-mix asphalt were stock model affairs, completely portable and capable of moving quickly from one pit to another. The rock plant was a Cedarapids machine, consisting of a 10x24 jaw and a 20x36 roll crusher, driven by a Caterpillar D17000 diesel. A D8 with Caterpillar U-type dozer was used to feed raw material into this plant.

The asphalt plant was also built by Cedarapids. It was a 3,000-pound batch plant, with conventional boiler heating for generation of steam. As a general rule the asphalt was loaded at the refinery at 400 degrees, mixed at the plant at 320 with aggregate whose temperature was 285, to produce a mix at the laydown area of 275 degrees.

Even when the job was nearly half finished, there had never been a shutdown due to lack of asphalt, despite the abnormally long haul. To control this phase, the Nelson Company leased from Vance & Peterson of Logan three Mack trucks with two semis of 6,000-gal. capacity and one truck-trailer combination of 6,700-gal. capacity. The three rigs were scheduled on a round-trip-per-day basis, with two drivers for each machine. One set of drivers was based in Las Vegas, another in Barstow, Calif. The Barstow drivers picked up the rigs at that point, drove in to Paramount to load, and returned to Barstow. The Las Vegas drivers picked up at that point, rolled the loads out to the job site, unloaded, and returned the machines to Barstow for another load.

Personnel Acknowledgments

Over-all direction of the big job was under H. D. Mills, Nevada's State Highway Engineer, with Otis Wright in charge of District 1 at Las Vegas and Ed Marriage as Resident Engineer. G. D. Brockway, Assistant District Engineer, also helped with field supervision.

Sam Gillette was in charge of field operations as General Superintendent for Carl E. Nelson.

Completion of the project early in March brings a much safer highway to vehicles moving to and from atomic proving ground area, as well as to all traffic heading between Las Vegas and Tonopah.

With the Manufacturers and Distributors

New Marion Sales Representatives. Marion Power Shovel Co., Marion, O., has announced the appointment of two new sales representatives: William B. McCausland to the company's district offices, 420 Lexington Ave., New York City, and E. Edward Staker to the Northwestern Ohio territory with offices at Marion, O. McCausland was formerly associated with the J. D. Adams Manufacturing Company of Indianapolis, serving as district manager for the company's New England area. Staker has been with Marion since July, 1951 as a service and erection engineer.

New Gradall Distributor. Brinker Supply Co., 511 West Town St., Columbus, O., has been appointed distributor for Gradall multi-purpose earthmover manufactured by The Warner Swasey Co., Cleveland, O. Brinker Supply will handle sales and service in 25 West Central and Southern Ohio counties.

Herr Heads Metal Products. Gilbert E. Herr, vice president and general manager since January 1942, has been elected president and general manager of Marion Metal Products Co., Marion, O. He succeeds former president J. Malcolm Strelitz, who died recently.

New Euclid Distributor. Herman M. Brown Co., First and Sheridan Sts., Des Moines, Ia., has been appointed distributor by The Euclid Road Machinery Co., Cleveland, O., for all of Iowa with the exception of 10 southwestern counties.

★ These men pushed the job. Resident Engineer Ed Marriage; Chief Inspector G. S. Harbin; Asst. District Engineer G. B. Brockway; and Contractor's General Superintendent Sam Gillette

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★ Five motor graders (Adams) in tandem scarifying and processing an old bituminous mat; U.S. Highway 34 in Colorado, summer, 1952

Heavy Discs Under Grader Helped Scarify Old Mat

When it comes to scarifying and reconditioning an old bituminous mat, no two projects are ever exactly alike. Traffic conditions alone may require modifications in methods. Weather delays further tend to complicate the work at times.

An eample of the variations in practice on such reconditioning is shown by the following brief case history of a 19.8 mile project on Colorado U.S. 54 west of Loveland during 1952.

This road which carries a heavy tourist traffic into the Rocky Mountain National Park had settled out of shape and suffered considerable breaking up. The decision was to scarify the old mat, pulverizing it to the point where none of the fragments exceeded one inch in size. Apparent base weaknesses were to be remedied by the addition of new granular material. Additional crushed material also was to be placed where scarification of the old mat would not produce sufficient relaying material.

★ Heavy discs, closely spaced, were mounted on one of the motor graders in place of the blade, to assist in breaking down scarified bituminous mat material. This device, mounted on one or more of the five graders, proved successful on the U.S. 34 Colorado project

Specifications called for the new material, whatever its source, to be graded from one inch down with approximately 8% of minus 200 particles. In this instance, SC-3 grade asphalt was specified for sweetening the mix, preparatory to re-laying.

Due to the heavy traffic and the desire to minimize traffic interference, seven heavy motor graders were put on the work. Five of the machines are shown in one of the accompanying photographs. In addition to scarifier teeth mounted on some of the graders, plus action of the blades themselves, pulverization was aided by the use of heavy discs mounted on one grader in place of the blade. According to D. N. Stewart, maintenance engineer, Colorado state highway department, these discs are one of several devices tried out with varying degrees of success to help scarify and pulverize old bituminous mat.

The discs in this instance were closely spaced, and so fastened to the grader that the operator could put the entire weight of his machine on the discs at times in order to break down material which had been previously scarified. The disc device is said to have worked very satisfactorily.

In addition to the five machines working in echelon on scarifying and pulverizing, two other graders were used for the final finish and lay-down of the mat following oiling.

Progress on this job was below normal for three reasons: working in a confined area, inclement weather, and the heavy volume of traffic. This road is a canyon section, the roadway being between the Big Thompson river and cliffs, making it impossible to progress as rapidly as on a prairie road. It was a constant problem to find a spot to turn the equipment. Here it was necessary to travel as much as 8,000 ft. or more due to lack of intermediate points available for turning around.

Reworking of Bituminous Pavements

An example of Virginia's methods of strengthening "middle class" primary roads at low cost to handle today's heavier traffic

By H. H. Harris
Maintenance Engineer
Virginia Department of Highways
Richmond

THE Virginia Department of Highways, in February, 1951, adopted a resolution requesting the Automotive Safety Foundation, in cooperation with the U. S. Bureau of Public Roads, Department of Defense, and the highway department to conduct a study as soon as possible which would accomplish the following objectives:

1. Develop minimum improvements necessary to sustain transportation with reasonable safety and efficiency during an emergency period (10 years).
2. Develop estimates of cost for partial or stop-gap improvement (and cost of ultimate improvement).
3. Develop a schedule of minimum material, equipment, manpower, and related requirements.
4. Establish priority program of improvements based upon measured relative importance.
5. Publish findings in form suitable for public consumption.

It is with the first of these objectives that I will deal in my discussion of "Reworking of Bituminous Pavements."

Virginia, during the course of its highway progress under the pay-as-you-go plan, has constructed a large mileage of surface treated roads on soil and local gravel bases. These materials, found predominantly in the Piedmont and Coastal Areas of the State, accommodate an economical and all-weather surface and facilitate the accomplishment of our goal of getting the people out of the mud.

While these roads served their purpose prior to World War II, many miles are now below our standard for the comfort and safety of present day traffic. The increase of traffic density and vehicle weights during the post-war years have burdened some of these roads, to the extent that certain improvements are mandatory to carry them through the emergency period.

Presented before the Maintenance and Equipment Committee, AASHO Annual Meeting, Kansas City, Mo., December 10-12, 1952.

Medium Traffic Arterials

The procedures under discussion in this paper are those being applied to many of our so-called "middle class" primary routes with an average daily traffic count ranging between 500 and 3,000 vehicles.

These routes were constructed in the 1920's and early 1930's. Grade and alignment were satisfactory at that time, and in many cases are satisfactory today with only minor revisions. Some of the weaker links in the design of these roads are narrow shoulders, inadequate curve superelevation, and distorted pavements.

To meet these needs, and carry out the instructions of the State Highway Commission, economical methods of reworking bituminous pavements were studied with general standardization on the following procedure, with such variations as found necessary to fit the particular needs of the individual route.

The road chosen for discussion in detail here is a continuous section of 7.5 miles of Route 40, in Charlotte and Campbell Counties, between the towns of Phenix and Brookneal.

Prior to the starting of work, depth and quality tests were run on existing base material by the Materials Engineer. On the basis of these findings, the amount and type of additional material required to support anticipated axle loading was determined. On this particular route an increased depth averaging 3 in. of ¾-in.-minus crusher-run stone was recommended. Some variations in depth of added material were made on those sections known from past performance to vary from the average.

The first operation was to scarify and pulverize the 2 to 3 in. bituminous mat, and 6 in. of the soil base. This was accomplished in three passes with a Wood Preparizer, pulled by an International TD-14 tractor. Approximately 12 in. width of the shoulder on each side of the 20 ft. pavement was also scarified at this time. The previously mixed material was machined with two 10-ton Galion motor graders to secure the approximate standard surface cross section.

★ Adding crushed stone base material for strengthening and curve superelevation

Following this operation, the crusher-run stone was truck-spread to the specified depth over the entire 20 ft. of surface and the additional one foot on each side.

Mixing Procedure

The Preparizer was then used to mix the added material into the processed bituminous mat and base material, to secure a homogeneous mixture for a depth of at least 8 in. Two coverages were required to thoroughly mix this depth. Water was added where necessary, in advance of mixing, to secure optimum moisture content as nearly as possible.

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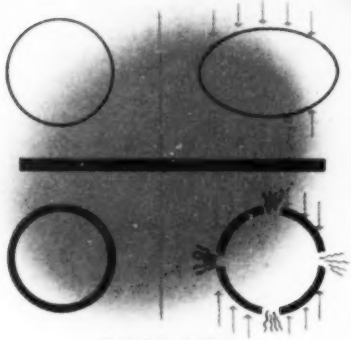

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★ After new material is added, Wood Preparizer makes mixing pass

★ Machining and shaping, after final pass of Preparizer

ess the two motor graders were again used to shape the surface of the desired cross section, working simultaneously with a 7-ton rubber-tired roller pulled by a 40-hp wheel type Case tractor. The road was then maintained under traffic for approximately two weeks, with such machining and watering as necessary to secure compaction and maximum surface consolidation.

The surface treatment applied to this project consisted of a prime of approximately 0.3 gal. per sq. yd. of RC-2, covered with 25 lb. per sq. yd. of ½-in. maximum aggregate. This was followed with a mixed-in-place treatment applied with a Hetherington-Berner motor paver. This treatment consisted of approximately 70 lb. per sq. yd. of ½-in. maximum size aggregate with 0.6 gal. per sq. yd. of RC-2, which was choked with approximately 10 lb. per sq. yd. of ⅜-in. aggregate. The finished surface was 20 ft. wide, with standard widening on curves. Shoulders were widened to a standard of 6 ft.

To give some idea of the cost of the operations involved in this type of rehabilitation, the average expenditures per mile on this project were:

Scarifying, pulverizing and mixing	$ 1,220
Additional materials in place	5,860
Machining	580
Rolling	260
Moisture	224
Shoulders	1,300
Prime and mixed-in-place treatments	3,400
TOTAL	$12,844

Due to the many variables encountered during reconstruction work of this type, an average estimate of cost would be difficult to obtain. Work completed on about seventy-five miles during the past two seasons has varied in cost from $8,000 to $13,000 per mile.

It is realized that this brief talk has dealt only with rather broad generalities, however, it is hoped that it has been of some value to those interested in reworking and strengthening old bituminous pavements. Satisfactory results have been economically achieved in Virginia through the use of this method of operation.

Alternate side parking extended in New York

New York City officials announced a plan to extend to 831 blocks their program of restricting parking to alternate sides of the street during specified hours. The program, which will be extended progressively during the next few months, will permit parking only on one side of the street during week days from 7 A.M. until noon. The ban prescribes alternate sides on alternate days to permit the city's mechanical sweepers to get into the gutters.

The plan, first tried in 1950, is already in force on 277 blocks in Manhattan and is considered successful according to Traffic Commissioner T. T. Wiley and Sanitation Commissioner Andrew W. Mulrain. The new restrictions will not apply to areas covered by parking meters. Car owners face still heavier violation penalties in addition to a $15 summons. Impending cars will be towed away, subject to a redemption fee plus $1 daily rental for storage. Over 3,300 cars have been impounded since 1950.

★ Final surface after prime application

★ Final machining and rolling

Asphaltic concrete testing methods appraised

By Fred J. Benson, Bulletin 126, June, 1952, Texas Engineering Experiment Station. Highway Research Abstracts, January, 1953.

This bulletin presents the results of a rather extensive study of asphaltic concrete test procedures. Three methods of compaction—the Marshall method, the Texas Highway Department method, and the Asphalt Institute method—were used. Six stability test procedures—the Hveem stability test, the Marshall stability test, the direct compression test, the Asphalt Institute stability test, the cohesiometer test, and a modification of the Texas Highway Department punching shear test—were studied. The primary objectives of the studies were: (1) to determine whether or not correlation existed between the various test procedures, (2) to study the effect of variations in type of aggregate, quantity of asphalt, and grade of asphalt on the various stability values, and (3) to study the effect of compaction procedure on density of mixtures and on results of stability tests.

The three compaction procedures were found to produce significant differences in density. The Marshall and Texas Highway Department procedures were studied for all of the stability procedures except the Asphalt Institute and were found to produce specimens showing considerable difference in stability values for all test procedures except the Hveem. These differences indicate a definite need for agreement on a laboratory compaction procedure for mixtures.

No correlation was found between the results of the Hveem stability test and the results of the other stability test procedures. Some correlation was found between the other stability test procedures. The correlation ranged in degree from good to poor.

All of the stability test results except those from the Hveem stability test were materially influenced by the grade of asphalt cement used.

The Marshall stability, Texas Highway Department punching shear, the ultimate strength in direct compression, and the Asphalt Institute stability test results, all show the same type of variation in stability with variation in asphalt content.

For the Marshall compaction procedure and a given grade of asphalt the maximum stability values for the Marshall stability, the ultimate strength in direct compression, the Asphalt Institute stability and the Hveem stability all indicate approximately the same difference in aggregate characteristics for the four aggregate combinations studied. The Hveem stability test is considered to be the best for studying the characteristics of the mixture which are dependent on the type of aggregate.

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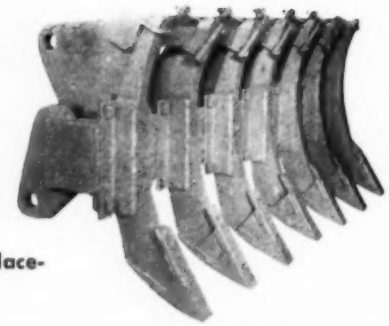

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Dravo Corporation offers industrial movie

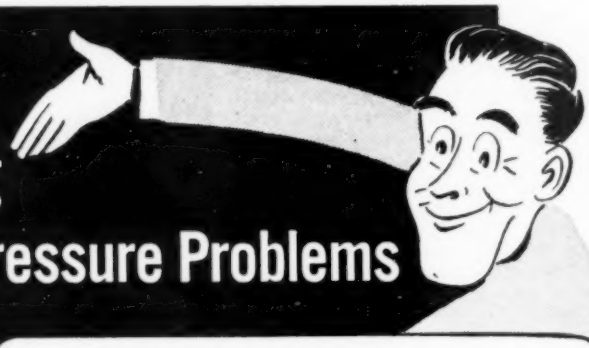
Dravo Corporation, Pittsburgh, has completed a new 30-minute, 16-millimeter sound film in color documenting the firm's activities. Entitled "Portrait of an Enterprise," the movie typifies modern American industrial engineering firms. Emphasis is placed on engineering of all kinds, the key to operations of Dravo's divisions and subsidiaries.

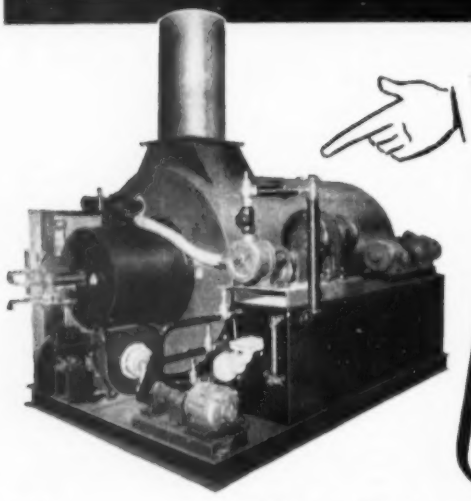
In the film are on-the-job scenes of heavy construction projects, river locks, dams, bridges. Also included are riverboat and barge construction and launchings, and operation of large ore unloaders. Production and distribution of river sand and gravel are highlighted in other sequences. Construction of a central station power plant and a gas transmission line compressor station are depicted.

The film is available without charge for showing to engineering groups, schools and colleges and other interested organizations. Write to Advertising Department, Dravo Corporation, Neville Island, Pittsburgh 25, Pa.

New Riddell Representative. Andrew Winters has been named to represent the W. A. Riddell Corporation, Bucyrus, O., in the southwestern states. He will be the Riddell factory representative in Texas, Oklahoma, Arkansas, Louisiana, Kansas, Colorado and New Mexico. His headquarters will be in Dallas, Tex.

HO Hot Oil Heaters *for* LO Pressure Heating NO Freeze, Rust or Pressure Problems





Here's the most efficient hot oil heating system available today! Hopkins developed this low-pressure heater for asphalts, chemicals, heavy oils, plastics, waxes, and many other materials. It's completely automatic, easy to operate, and gives you accurate, uniform heat control 24 hours a day. Ends all freeze, rust and pressure problems—lessens maintenance worries.

If your industrial heating process requires a temperature between 212° F. and 400° F., the HO System is your best bet for dependable, low-cost heating. Write or phone us today for literature and complete details.

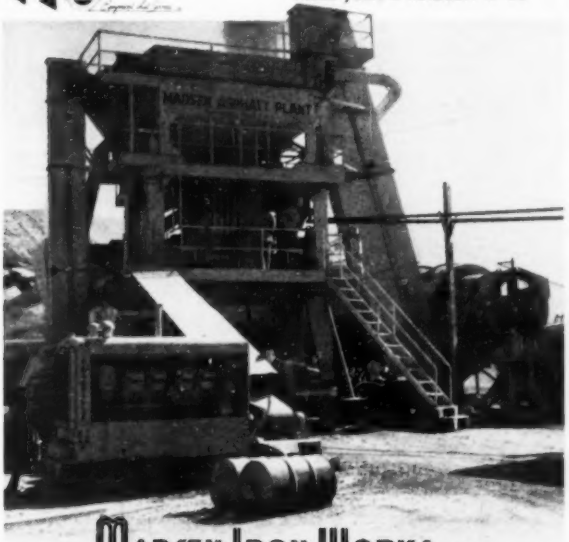
HOPKINS VOLCANIC SPECIALTIES, INC.

ALLIANCE, OHIO

TAKE A LOOK ... at California's Favorite

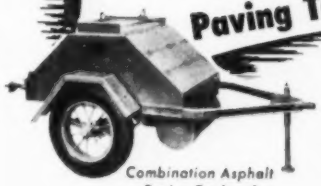
In the state that leads all others in the number of asphalt plants . . . MADSEN Plants are recognized as the leader . . . the **standard of comparison**. The MADSEN 4000-lb. batch capacity unit shown is famous for its high-speed mixing cycle and the super-speed pressure injection system (a patented MADSEN feature) . . . outstanding advantages which help to keep MADSEN Asphalt Plants far ahead of the field in high production and profitable operation.

Make yours a MADSEN in '53

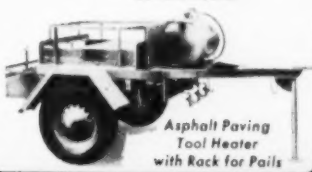


MADSEN IRON WORKS, INC.
P. O. BOX 589 • HUNTINGTON PARK, CALIF.

Heat Tampers and Smoothers in HAUCK Asphalt Paving Tool Heaters



Combination Asphalt Paving Tool and Cement Heater

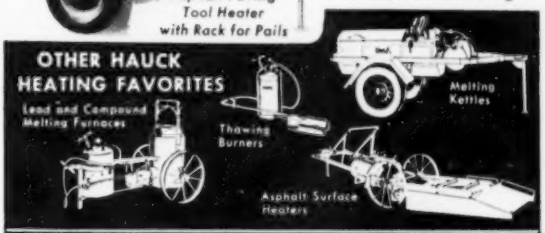


Asphalt Paving Tool Heater with Rack for Pails

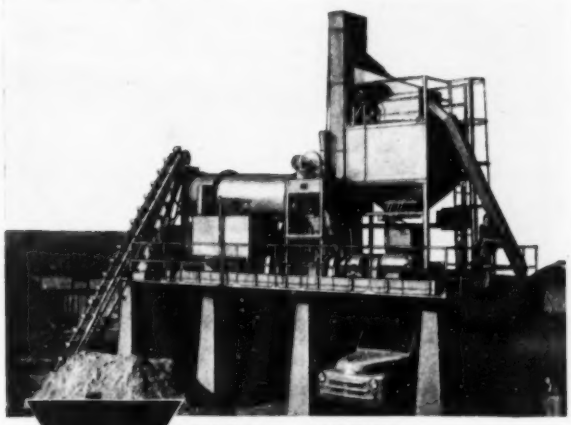
Heat 16 or More Tools in 5 Minutes

Hauck Heaters get your asphalt tools ready as you need them. Burn kerosene; can also be furnished to burn L.P. gas. No sparks, no smoke, no ashes. Only safe, controlled heat. Available with built-in binder cement kettle or with rack for binder pails.

Write for Catalog



HAUCK MANUFACTURING CO.
119-129 Tenth Street • Brooklyn 15, N. Y.



WHITE ASPHALT PLANTS FOR HOT-MIX PAVING

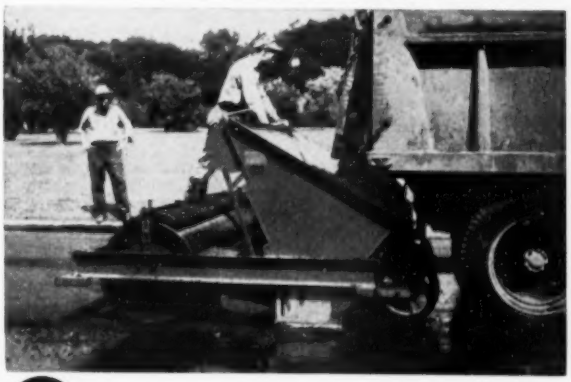
These reasonably-priced stationary hot plants are complete on one steel frame, for easy moving to a new location. Excellent for medium size city paving jobs, for street and highway maintenance, and for paving driveways, alleys, sidewalks or industrial plant areas.

Oil-fired rotary dryer, batch mixer, vibrating screen, divided hot bin, dust collector, volumetric or weigh scales, engine or electric power, air controls.

Model L-12, 12-15 tons per hour; Model L-25, 25-30 tons per hour. Portable units also available

For FREE circular, write—

Elkhart 20, White Mfg. Co. Indiana



OVERMAN'S STONE AND BITUMINOUS SPREADER

. . FASTER
. . SMOOTHER

Yes, the new improved model now has several added features that make it better than ever. If you do paving of any kind, no matter how large or small the job, you can't afford to be without this spreader.

Write for descriptive bulletin today

I. J. OVERMAN MFG. CO.
BOX 203 MARION, IND.

REAL ROLLING ECONOMY

The 1953 Model CON-SOL All Purpose Power Roller, redesigned for easier handling and greater strength, is the choice of smart contractors for the many smaller jobs for which their standard road rollers are too heavy.

Its weight of 1400 pounds, with both rollers and the 15 gallon sprinkler tank filled with water, is just right for construction of driveways, parking lots, sidewalks and for patching jobs. The sprinkler tank drips water on the rollers to prevent sticking. Powered by a Briggs & Stratton 2½ hp engine, it is economical to operate. Easy to operate, too, because shifting from forward to reverse is controlled by foot levers . . . hands are free to steer and to operate the throttle.

Easily transported from job to job—without loss of time—because it can be carried by a station wagon, pick-up truck or other light conveyance. This means more profitable work done per day, and more income for the contractor.

Let one or more CON-SOL power rollers help increase your 1953 profits. Write today to **Dept. B3** for full information and booklet.

CON-SOL

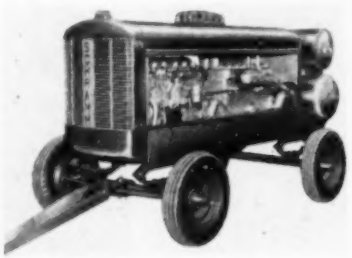
CONSOLIDATED INDUSTRIES, INC.
WEST CHESHIRE, CONN., U. S. A.

Equipment and Material Notes

47

New dezoil engine driven 210 CFM compressor

A new model dezoil engine driven 210 CFM compressor, added to the line of Schramm, Inc., Dept. R-S, West Chester, Pa., has been designed for users where initial cost and fuel economy is an essential factor. It differs from the gasoline engine driven units only in that the diesel fuel is injected into the cylinder by the



Schramm Dezoil Engine Driven 210 CFM Compressor

American Bosch injection system. Bosch magneto is used for ignition. In addition to the advantages of fuel economy in the new unit it also has the benefit of the pneumastat. This simple fuel-saving control operates the compressor continuously from part capacity to full capacity without loading or unloading. This is stated to result in fuel savings up to 50%.

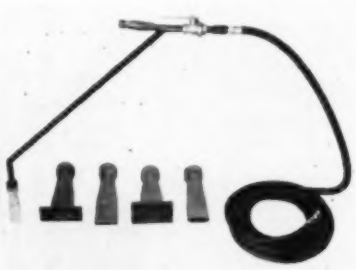
The new compressor steel wheel mounted and on four pneumatic tired wheels, less springs, has a length of 129 in., a width of 67 in., a height of 63 in., and approximate weight of 4,520 lb. For truck mounting the length is 129 in., width 114 in., height 52 in., and approximate weight 3,900 lb. Mounted on four pneumatic tires with springs the length is 129 in., width 67 in., height 67 in., and approximate weight 4,370 lb. Skid mounted the length is 138 in., width 48 in., height 52 in., and approximate weight 3,930 lb.

Circle the number of this item on the post card to get additional information.

48

New system for installing sealing compounds

A new, easy-to-handle applicator, component of a completely new and simple system for installing sealing compounds in



Phillips No. 77 Applicator

ROSCO
MINNEAPOLIS

ROAD and STREET CONSTRUCTION and MAINTENANCE EQUIPMENT

BITUMINOUS DISTRIBUTOR . . . Streakless application with pressure constantly and automatically maintained.

STREET FLUSHERS . . . Truck mounted or 2-wheel trailer type. Standard or custom built.

MAINTENANCE UNIT . . . For repair and secondary construction. Truck or trailer mounted.

STREET CLEANER . . . Settles dust as it cleans. Sweeps and washes the street.

OTHER ROSCO PRODUCTS: Road brooms—traction or powered . . . tar kettles . . . power pumping units.

ROSCO MANUFACTURING CO.
3118 SNELLING AVE. • MINNEAPOLIS 6, MINN.

Ask Your ROSCO DEALER or write the factory for literature.

ROSCO TAR KETTLE

For heating and melting asphalt, pitch and all types of bituminous materials. Welded all-steel construction.

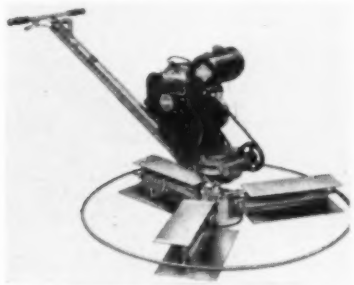
joints and cracks in concrete and asphalt construction has been announced by Phillips Products, Inc., Dept. R-S, 1442 West Tenth St., Cleveland 13, O. The applicator was developed to apply the ready-mixed, cold-applied sealers that are now in the specifications of highway departments of states. The Phillips applicator system is stated to provide practical, economical and high quality installations by pumping sealer through this equipment. Called the Phillips No. 77 Joint Sealing Compound Applicator, the new unit has been designed to provide a lightweight, well-balanced tool for use in both new construction and maintenance work. Outstanding feature of the applicator is its conveniently located flow-control valve that operates instantly and smoothly under all service pressures.

Circle above number on bound-in card post card and get additional information.

49

New rotary concrete finisher has gyral safety device

A new Master Turn-A-Trowel rotary concrete finisher, announced by Master Vibrator Co., Dept. R-S, Dayton 1, O., has new scientific balancing for easier operation and a gyral safety device. The scientifically balanced head makes possible operation



New Master Turn-A-Trowel

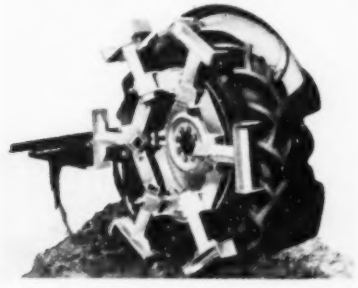
with less than half the effort. In addition, a gyral safety device is offered as standard equipment. This device shuts off the engine automatically in case the machine gets away from the operator and may also be used as a grounding switch for stopping the engine when work is completed.

Circle above number on bound-in card for more information.

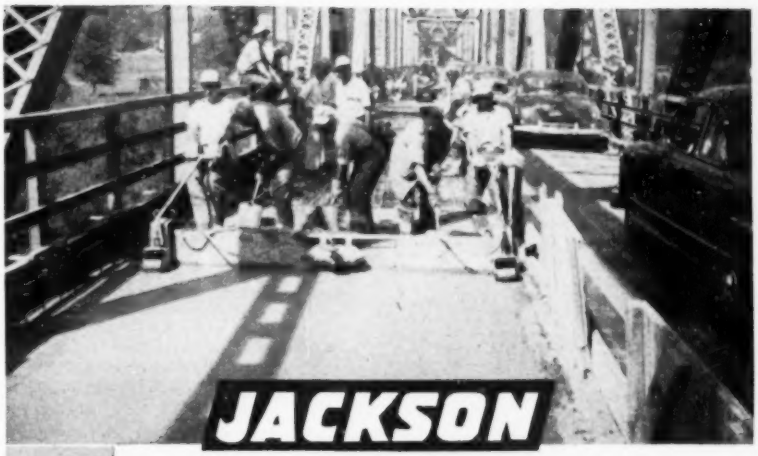
50

Crawler power for rubber tired tractors

A new product, announced by Comeo, Dept R-S, Box 983, Kilgore, Tex., makes it possible for a rubber tired tractor to operate efficiently in mud, snow, ice, rock, sand, hills, and on hard ground. A framework supporting the lugs, bolts on the outside of the tractor wheel, using the same bolts for the tractor wheel and tire. Under adverse ground conditions, these lugs are extended beyond the width of



Vise-Grip Retractable Lugs



JACKSON

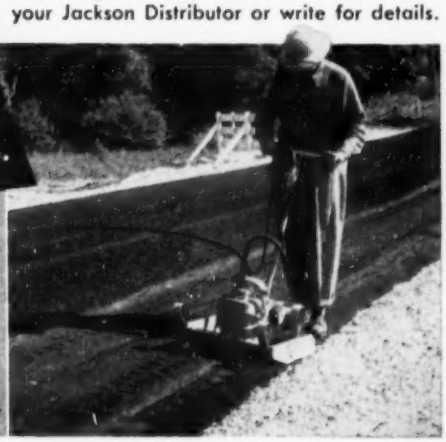
HANDIEST and MOST PRODUCTIVE
SCREED on the MARKET!

For the tight spots or just straight-away paving you will find the Jackson Electric Vibratory Screed the fastest, most convenient and efficient screed you have ever used. It strikes off to any crown, undercuts at curb or sideform, works up to and around all obstructions. It permits pouring slabs up to 30′ without center joint. Requires only two men on widest slab and is the only screed that can be rolled back for second passes on 4 rollers. Powered by Jackson Portable Power Plant. For rent or for sale at your Jackson Distributor. Details on request.

A FASTER, MORE POWERFUL
JACKSON COMPACTOR

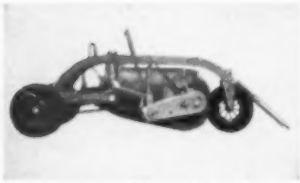
Now vastly more powerful, this vibratory self-propelled, machine will compact bituminous mixes close to maximum density at the rate of 2400 sq. ft. per hour. Operated from a Jackson Power Plant mounted on auto trailer with quick-pickup of Compactor, it is highly mobile and a tremendous time-and-money saver on jobs such as indicated at the left. Quickly achieves maximum density in granular soils. Available with quickly interchangeable bases of 12″ to 24″. See your Jackson Distributor or write for details.

FOR QUICK CONVENIENT COMPACTION of BLACKTOP in HIGHWAY WIDENING & PATCHING . . . DRIVES, WALKS.
GRANULAR SOILS.



JACKSON VIBRATORS
INC.
LUDINGTON, MICH.

GRACE
Asphalt and Compaction Equipment

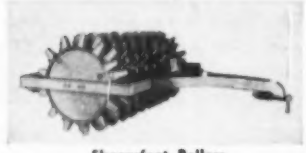


3 sweeper models, axle, engine or tractor powered.

Chip spreaders 8′ to 12′ width. Also asphaltic concrete spreaders.

Rapid Fire circulating heaters heat and unload large tanks of asphalt.

Rapidspray Maintenance Distributors. Also heaters for production melting of barreled asphalt.



Sheepsfoot Rollers 250 to 600 psi.

Pneumatic rollers 7 to 50 tons.

W. E. GRACE MFG. CO.

4007 S. Lamar Dallas, Texas

YOU SAVE THE PAY-CHECK OF THAT EXTRA MAN with the

CENTURY SEAL-COAT UNIT

Complete hydraulic control from the truck cab means only one man — the driver — to spread, to control flow and to shut off.

The Century provides unmatched performance in laying an accurate, uniform metered mat. No misplaced material, no surpluses to clean up . . . Handles all aggregates up to 1½ inches in size . . . Tops for laying shoulder ballast.

Earn a bigger profit — save costly labor . . . Do a better job — with the CENTURY. Write today for prices and specifications.

Flow-channels are carefully calibrated and positioned for even, uniform distribution of aggregates.

CENTURY ENGINEERING CO. WAUKESHA, WISCONSIN

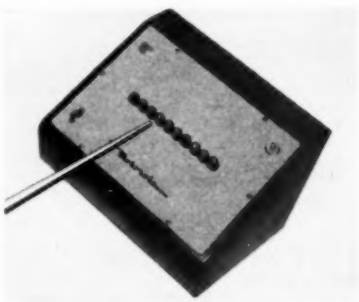
the tractor tire. When ground conditions improve, or when necessary to travel on a hard surfaced road, the lugs can be retracted. Vise-Grip lugs are available for all standard tractor tires. It only requires 4 minutes and a wrench to extend or retract the lugs. In an actual field test, it is stated that the drawbar pull on a small farm tractor was increased from 2,000 lb. to 5,200 lb. in dry sandy loam.

Circle the number of this item on the post card to get additional information.

51
Single tone selective signaling system

A dependable, single tone selective signaling system has been developed and is being produced by Motorola, Inc., Dept. R-S, 4545 Augusta Blvd., Chicago 51, Ill. The new selectivity signaling system is stated to have widespread applications in industrial, public safety, transportation, and utility communications systems. The system has been designed for use in conjunction with any communication medium —two-way radio, land lines, microwave or power line carrier, anywhere that remote control or receiver selection is a necessity.

The function of the system is to allow any operator to initiate an operation at one or more remote points through an intervening communication medium. The opera-



Single Tone 10-Button Selector Box

Get the FACTS!

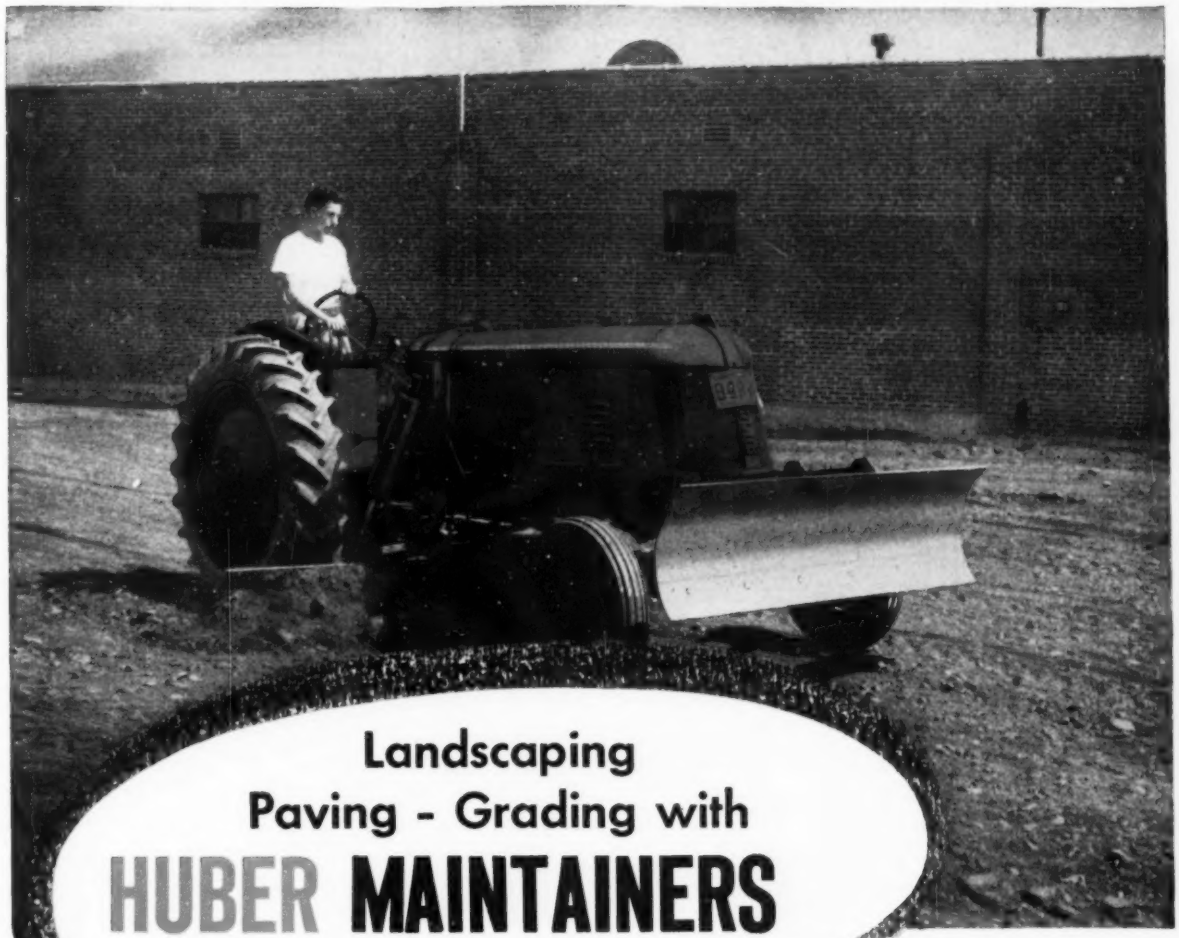
For good living near the job, Schult offers BIG VALUE. For information, write now. Dept. 6603.

SCHULT CORP.
ELKHART, INDIANA

RUBBER ROADS
NATURAL RUBBER POWDER

For use in bituminous pavements — available for immediate delivery

H. A. ASTLETT & CO., INC.
313 Congress St.
Boston 10, Mass.



Landscaping Paving - Grading with HUBER MAINTAINERS

Hartford Contractor Keeps Two HUBERS Busy

Service station installations, roadways, parking areas and playgrounds are typical jobs in which the Kessler Construction Company of Hartford, Connecticut, specializes. They serve an area within a 50-mile radius of Hartford.

A pair of Huber Maintainers helps them get work done quickly and efficiently. The Hubers perform a variety of jobs, including rough and finish grading. R. E. Kessler, who founded the firm in 1940, likes the over-all efficiency of the Hubers.

Let your nearest Huber Distributor give you the facts about this 6,000-lb., 42½ H.P. machine and attachments that enable it to handle nine different kinds of work. Or write us for a free 16-page booklet fully describing the versatile, dependable Maintainer

HUBER MANUFACTURING CO. • Marion, Ohio, U. S. A.
Manufacturers of Huber Maintainers, Graders and Complete Line of Rollers

HUBER

NO TIME LOST!
LOADING OR LAYING ITS LOAD

A STANDARD STEEL PRESSURE DISTRIBUTOR GIVES EQUAL CIRCULATION THROUGHOUT THE SPRAY BAR FOR A UNIFORM SURFACE FROM CURB TO CURB FOR LONGER WEAR

STANDARD STEEL
PRESSURE DISTRIBUTOR

The Model 424 can be loaded in quick time for a "fast getaway". A two-way cleaning system guarantees a clean spray bar at the end of the day. First, the material is sucked out of the bar and back into the tank. Then by turning one small valve, cleaning solvent is released into pump and spray bar (without contaminating the asphalt in the tank). No time lost in tinkering — no time lost in loading — Standard Steel 424 keeps going all day long far ahead of the "gravel gang"

WRITE FOR CATALOG 424

OTHER PRODUCTS OF STANDARD STEEL

Maintenance Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Street Flushers, Construction Brooms.

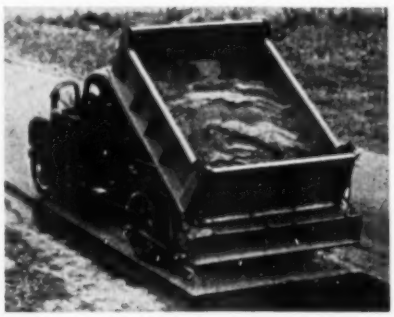
Built to the Highest **Standard** PD-1

Standard Steel Works NORTH KANSAS CITY, MO.

Do your sealcoating and ice control jobs the fast easy Swenson way. Spreads salt, chloride, sand, rock chips, gravel or cinders any width or amount desired.

Free Information

Swenson Spreader & Mfg. Co.
Lindenwood, Illinois



tion may be the selection of a particular receiver or group of receivers from many receivers in a system, the selection of a particular relay transmitter, the illumination of a particular alarm, any operation that can be remotely controlled by a relay. There are four basic components to the single tone system: the 10-button selector box, the single tone oscillator, the three frequency switch kit, and the single tone decoder.

Circle the number of this item on the post card to get additional information.

52
Torque-limiting wrench has automatic release

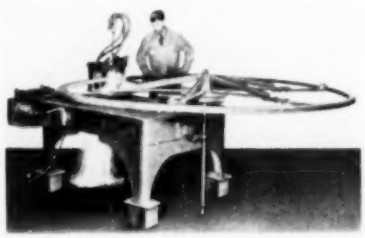
Ratchet Head and Plain Head Models

A new PROTO precision torque-limiting wrench without the usual external indicating devices, announced by Plomb Tool Co., Dept. R-S, Los Angeles, Calif., is stated to be suited for nut and bolt torquing by almost all types of industries and by all mechanics. The new PROTO torque wrench is claimed to differ from most conventional types in four basic respects: First, it is a torque-limiting device (releases automatically at proper setting), and not a torque-indicating device (requiring dials, pointers, scales, sound indicators, etc.). Second, it employs a fully enclosed precision spring under compression as the principal torque-controlling element. Third, it uses an accurate micrometer-type adjustment. Fourth, models with a built-in reversible ratchet head are available that do the work of both a ratchet and torque wrench.

Circle the number of this item on the post card to get additional information.

53
Flame-cutting machine for gears and sprockets

A new 3-spindle flame cutter for producing gears and sprockets has been announced by Cogmatic Co., Dept. R-S, 1330 N. Franklin Pl., Milwaukee, Wis. In addition to the advantage of cutting alloy steel as quickly as mild steel and hardening while cutting with coolant stream, a number of new production advantages are claimed. Jury spin-



Cogmatic Flame-Cutting Machine

dle attachment (see illustration) makes it possible to produce sprockets or gears that are actually bigger than the machine itself. Multiple spindle design, also new, permits automatic production of 3 gears or sprockets at a time, in diameters up to 15 in.; 2 at a time up to 25 in. diameter. The Cogmatic unit is said to be capable of machining as much tooth metal per hour as is possible with 3 conventional gear cutting machines. It automatically produces over 300 shapes and sizes of teeth, 5 to 200 teeth per wheel, diameters 3 in. to 108 in. The machine is stated to be ideally suited for production of gears and sprockets that will withstand heavy duty service of earthmoving and construction equipment.

Circle the number of this item on the post card to get additional information.

54

Plaster-mortar mixer has winch head

An inexpensive winch head attachment has been provided for Model 6-P plaster-mortar mixer of Kwik-Mix Co., Dept. R-S, Port Washington, Wis., a subsidiary of Koehring Co., Milwaukee, Wis. The attachment is optional and is said to provide sufficient lifting service to eliminate the added expense of special hoisting equipment and labor. Mounted outside the mixing drum and revolving with the paddle

Plaster-Mortar Mixer with Winch Head

shaft, the winch head can be applied either on the tilting or non-tilt mixer models. It has an average lifting capacity of approximately 250 lb., based on the anchoring ability of the mixer itself. Additional weight can be handled if the machine is securely anchored or counterweighted.

Circle the number of this item on the post card to get additional information.

55

Asphalt melting kettles have new design features

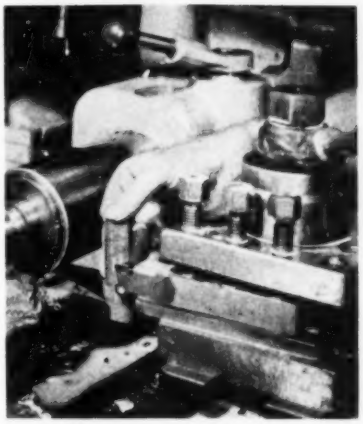
New "Heet-Master" asphalt melting kettles on four pneumatic tired wheels (tandem arrangement) have been introduced by Aeroil Products Co., Inc., Dept. R-S, South Hackensack, N. J., to provide faster delivery of "hot stuff" in larger quantities for big jobs. Two models, of 375 and 500-gal. capacity, embody all features of Aeroil "Heet-Master" internal tube heated kettles, plus new design features for complete maneuverability with heavier equipment.

Special features include heat risers, a double tube heating system (patented) claimed to insure "hot stuff" only a few moments after the burner has been started, low loading height, low point of gravity, load equalizers, short turning radius, lockable rain covers, adjustable tow eye, and many others. These kettles can be equipped for the construction industry, with a power spray attachment or a hand spray attachment for road work.

Circle the number of this item on the post card to get additional information.

56

Hone for sharpening single-tip carbide tools



Hand Hone Sharpening Cutter

A new hand hone specially developed for on-machine sharpening of single-point tungsten carbide tools has been announced by Chicago Wheel & Mfg. Co., Dept. R-S, 1101 W. Monroe St., Chicago, Ill. Manufacturer claims up to 30% longer "between grinds" tool life results when new hone is used at first signs of tool dullness. User merely applies a few light strokes over tool edge, taking care to hold hone flat against surface so as not to round cutting edge or change relief angle. Hone quickly and effectively touches up tool while mounted on machine, thereby cutting down time formerly needed to remove tool and regrind.

Circle the number of this item on the post card to get additional information.

57

Hand calculator for office and field calculations

The Curta calculator, announced by Curta Calculator Co., Dept. R-S, 3851 W. Madison St., Chicago 24, Ill., manufactured abroad by German and Swiss technicians, combines the versatility of a large desk calculator with the portability of a slide rule. Each part is precision engineered, not stamped out. It adds, subtracts, multiples, divides, cubes, and gives square roots. It fits easily in the hand and weighs but 8 oz. Comes complete with full instructions and special shock-proof metal container. The price is $142.

Curta Calculator

Circle the number of this item on the post card and get additional information.

58

New coil spring joint folding ruler

Eagle Rule Mfg. Corp. has just announced a new development in their folding rules—the coil spring joint. It is claimed to be the greatest improvement in folding rules in 20 years. These rules are firm even after long, continued usage. It is claimed that the joints are still firm after 75,000 cycles, which is equivalent to a carpenter's using the rule 50 times a day for 6 years.

Circle the number of this item on the post card and get additional information.

59

Self-cleaning return roll for belt conveyors

The recent introduction of a self-cleaning "Chevron Rod" return roll by Barber-Greene Co., 400 North Highland Ave., Aurora, Ill., promises to solve a long standing problem in the field of belt conveying. This problem is posed by wet, exceedingly fine or sticky materials which adhere to the return run of the belt.

These materials tend to build up un-

"Chevron Rod" Return Roll

evenly on the return rolls. This, in turn, causes the belt to weave from side to side causing damaging contact between the edges of the belt and structural members of the conveyors, hangers, brackets, etc. Such contact causes the belt to deteriorate rapidly and severe tearing can occur if the situation is not checked. The problem, therefore, is to prevent build up on the return rolls which support the belt. The Barber-Greene Co. offers a solution in its self-cleaning "Chevron Rod" return roll.

Because of the open design of this carrier, the material has almost no area on which to build up. Also, vibration or "slapping" action of the rods as they contact the belt dislodges any material, before it can buildup on the roll. This insures far less adherence and build up on the roll than is normally experienced in the use of conventional rubber-tired rollers.

Circle the number of this item on the post card and get additional information.

60

New cold plastic sewer joint compound

Production of new, improved Sewertite, a cold plastic sewer joint compound, has been anounced by The Philip Carey Mfg. Co., Dept. SP, Cincinnati 15, O. It is claimed that Sewertite because its thermoplastic properties gives joints tight but flexible sealing, and provides greater resistance to cracking than ordinary rigid cement or hot sealing compounds. A scientific formula combining bitumens, organic additives, asbestos fibres, mineral stabilizers and solvents Sewertite's heavy trowel consistentcy plus a new additive give the compound extra adhesive powers. Sewer-

Does the wire rope you use earn this kind of TRUST?

Typical of many, one master mechanic says, "We *always* use Hercules Red-Strand wire rope, because we know we can trust it for long life and safe service . . . every time." An inspector reports, "On a work test, we really abused Leschen rope. It *more* than satisfied our requirements."

HERCULES Red-Strand deserves it

Why is that so? Simply because *higher-than-rated quality* in Red-Strand wire rope means *greater-than-expected* safety and performance.

If you're not getting this kind of praise from your men, you should try Hercules Red-Strand. Do it, next time you need wire rope.

HERCULES® Red-Strand wire rope made by A. Leschen & Sons Rope Company, St. Louis 12, Missouri

In business only to make wire rope . . . better wire rope . . . since 1857

HIGHER-THAN-RATED QUALITY

LESCHEN

WIRE ROPE AND SLINGS

A. LESCHEN & SONS ROPE COMPANY

DISTRIBUTORS IN ALL PRINCIPAL CITIES

tite is acid and alkali resistant, waterproof, flexible and permanent. Other advantages include immediate back-fill after application, flexible joints which remain pliable, reduction of danger of root break through and long life without joint repair.

Circle the number of this item on the post card and get additional information.

61

Street sweeper has rubber elevator chains

Development of steel cable reinforced rubber drive chains for the dirt elevator

Cutaway View Showing Rubber Drive Chain

of Wayne motor sweeper has been announced by Wayne Manufacturing Co., Pomona, Calif. These rubber chains, designed and built for Wayne by Gates Rubber Co. engineers, are standard equipment on all new Wayne sweepers.

This exclusive new feature is claimed to eliminate elevator troubles for all practical purposes for the life of the sweeper. The rubber chains incorpoate a center core of many woven cables of high alloy steel, stronger than steel chain. Thus, the chain combines the wear resisting, shock absorbing performance of tough rubber with the ability of steel to eliminate stretch, provide more stamina and backbone, and give a higher strength factor.

Wayne rubber chains are now standard equipment on all new Model 1-450 and 2-450 Wayne sweepers. The sprockets on which the rubber chains operate are of hardened cast iron and are designed so as to provide true self-cleaning action. They are of split construction to facilitate installation on the elevator drive without removing the shafts.

Circle the number of this item on the post card and get additional information.

62

Rubber set wire brush scale cleaner

A new wire cup brush with replaceable filler has been developed by Hewitt-Robins, Inc., for the removal of rust, scale, paint, and grime from equipment, tanks, gears and other metal surfaces.

The brush, an addition to the company's Rubberlokt line, consists of inner and outer metal adapters with a replaceable cup-shaped filler in which the wire bristles are anchored in place with rubber.

The new brush is expected to be more economical because the metal adapters need be purchased only once. The cup shaped filler can be replaced a limitless number of times.

Circle the number of this item on the post card and get additional information.

63

Head loss data on Carlon plastic pipe

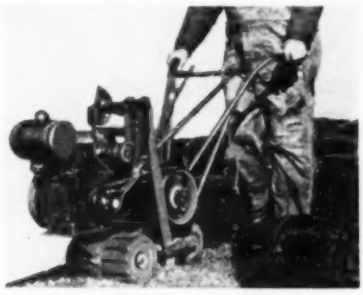
Authoritative data has been compiled on head loss due to friction in Carlon plastic pipe and is available in the form of charts and graphs from Carlon Products Corporation, Dept. R-S, 10225 Meech Ave., Cleveland 5, O. The data are based on a combination of Carlon's own experience and a compilation of data derived from a check of flow properties by foremost hydraulic laboratories. The charts and graphs are stated to reveal exceptional flow characteristics resulting from a combination of smooth interior and non-wetting characteristics of Carlon plastic pipe.

Circle the number of this item on the post card and get additional information.

64

Sod cutter handles like power lawn mower

A new Ryan sod cutter, announced by K & N Machine Works, Inc., Dept. R-S, 871 Edgerton St., St. Paul 1, Minn., is powered by a 4 hp gasoline engine, and it is stated, that with it one man can cut up



Ryan Sod Cutter

to 5,000 sq. yd. of sod per day. Light in weight and handled easily by one man, the Ryan cuts a uniform swath even over rough terrain. Thickness may be adjusted from ½ in. to 2½ in. Available in 12 or 18 in. widths, the spring steel blade cuts through roots without tearing; stones trip a unique shock release.

Circle the number of this item on the post card and get additional information.

65

Test instrument for two-way radio

A new frequency and modulation meter for use in the maintenance of two way radio systems has been announced by the General Electric Co.'s Electronics Division, Syracuse, N. Y. Purpose of the new instrument, is to help maintain transmitters and receivers in two-way radio systems on their assigned frequencies, as required by the Federal Communications Commission. The meter, type ST-13-A, measures modulation swing and carrier frequency of FM transmitters, and features both high and low RF output for receiver alignment. It is aavilable with either one or two crystals, for servicing single or two-frequency systems, in both the low (25-50 mc), medium (72-76 mc) and high (152-174 mc) bands.

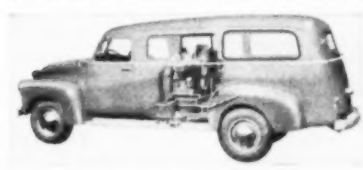
Circle the number of this item on the post card and get additional information.

66

Compressor for mounting on panel trucks

A new "Auto-Air" compressor assembly suitable for mounting on standard panel type trucks, has been announced by Davey Compressor Co., Kent, O. Known as Model 105-VBA, the unit delivers 105 c.f.m. at 100 lb. pressure. It is driven directly from the truck engine through a Davey P-80 heavy duty power take-off. Compressor occupies only one-third of truck body, leaving the remainder open for the transportation of men, tools and materials.

Circle the number of this item on the post card and get additional information.



Cutaway View Showing Compressor Assembly

67

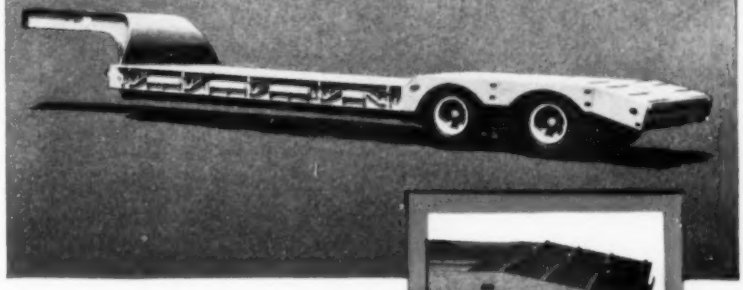
Wheel block designed to hold heaviest vehicles

A new heavy duty truck and trailer wheel block, made of high strength cast alloy steel, recently introduced by the Calumet Steel Castings Corporation, 1636 Summer St., Hammond, Ind., is designed to hold heaviest vehicles and loads with ease. The new block incorporates a number of features that is stated to assure positive, safe holding under even the most adverse conditions of grade, surface and load. The wheel blocks are furnished with cast-in holes on the bottom plate to permit nailing the wheel block to freight car or truck floors, shipping platforms, etc. to insure positive blocking of heavy equipment during shipment.

Casteel Safety Wheel Block

a modern move with the modern design of the

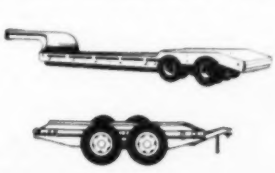
JAHN THD-425 HEAVY DUTY TRAILERS



Pressed Steel Car Company takes a great deal of pride in presenting the newly developed and designed THD-425 Heavy Duty Trailer. It features eye-appeal and pride of ownership, so important to particular businessmen. The new PSC Slope-Ramp replaces the cumbersome and troublesome splash guards of more outdated trailers. The THD-425 is only one of the improved models in Pressed Steel Car's line of new heavy duty trailers for use in hauling from 5 to 100 tons. Investigate the possibilities of Jahn Trailer economizing for you. Mail the attached coupon for additional details and technical information.

Slope-Ramp Features

- Ease of loading.
- Replaces mud and gravel flaps now required in almost all states.
- Built according to customer specification.
- Increase deck length.
- Eliminates ramps in many cases.

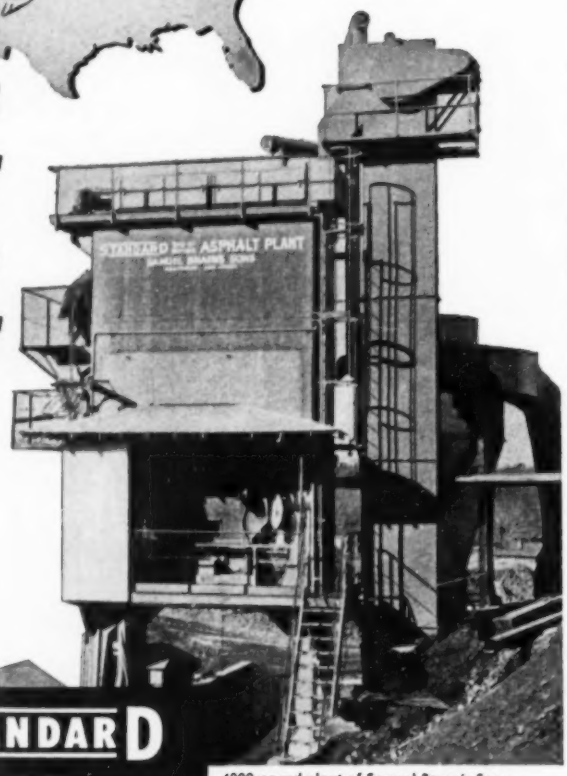


PRESSED STEEL CAR COMPANY, INC.
JAHN TRAILER DIVISION Dept. R & S
136th Street and Brandon Avenue
Chicago 33, Illinois

PSC

Dear Sir:
Send me literature on the Jahn THD-425 Heavy Duty Trailer or any others I have checked.
☐ Tilt Trailers ☐ Semi-Trailers, Capacity.....
Name.....
Address.....
City.....State.....

WHERE EAST LIKES WEST



STANDARD RB ASPHALT PLANT

4000 pound plant of Samuel Braen's Sons, Hawthorne, New Jersey

12 *sold in Atlantic Coast states alone in less than one year*

"California made" *Standard RB Asphalt Plants* really must have something to make East Coast operators "buy 'em by the dozen". That *something* is balanced performance which gives the RB its profit-making extra capacity. You just *breeze* through tremendous tonnages with a STANDARD PLANT because there are none of the usual bottlenecks. Extra large dryer capacity and oversized elevators, extra large vibrating screens and air handling systems all contribute to smooth, synchronized performance. Write for illustrated Bulletin No. 525 and see for yourself what makes the Standard RB now America's fastest selling asphalt plant!

UNIT BUILT—8 SIZES, 500 to 6000 POUND CAPACITIES

STANDARD

STANDARD STEEL CORPORATION

5003 Boyle Avenue, Los Angeles 58 ★ 7 East 42nd St., New York 3

MANUFACTURERS' LITERATURE

Use the post card insert. Just circle numbers of items you wish to have.

68

100 years' engineering progress with wood

The past century's development of wood from the status of a natural resource having broad utility value, yet with little known of its strength properties, into an engineering material with predetermined load-bearing capacities, is recounted by 26 of the nation's leading engineers, road technologists and scientists in the book "Proceedings of Wood Symposium on One Hundred Years of Engineering Progress With Wood," published by Timber Engineering Co., Dept. WS-E 1319 18th St., N. W., Washington 6, D. C.

The book is a compilation of outstanding papers presented at the wood symposium held during the centennial of Engineering Convocation in Chicago last fall. The papers cite virtually all phases of wood utilization and the factors affecting their progress during the past century. Included are working stresses, structural and other commercial lumber grades, laminated timbers, and engineering progress with wood in building and on the railroads, the highways and the high seas.

69

Bilingual bulletin gives data on wrought iron pipe

To aid technicians in Latin-American countries and those in this country who specify for the export trade, A. M. Byers Co., Pittsburgh, Pa., published a 4-page, bilingual bulletin, containing the most frequently required data on wrought iron pipe. Data are printed in English and Spanish and, where applicable conform to standards of the American Standards Association, the American Society for Testing Materials and the Association of American Railroads.

The bulletin lists the major uses of wrought iron for corrosive services including building, general construction, underground piping and marine applications. Consolidated tables show size and dimensional data for standard weight pipe, line and drive pipe, and extra strong pipe. Complete information is included on diameter of pipe, weight pounds per foot, test pressure per square inch, wall thickness and number of threads per inch. Specifications cover butt-welded and lap-welded pipe, as well as diameter and length of couplings.

70

How to prepare perspective drawings

A new technical bulletin "How to Prepare Perspective Drawings for Training Literature," has been announced by T. M. Publishers, Inc., 936 North Michigan Ave., Chicago 11, Ill. While the subject matter of this booklet is a basic requirement on all military contracts, use of the same type of drawings is stated to have already proved to be profitable commercially—both from the standpoint of increased parts sales as well as better customer satisfaction resulting from better maintenance experience. Ways and means are suggested and illustrated which will help most manufacturers within their own organizations, from their engineering department through the production line to their service and field representatives.

71

New booklet covers safety tread applications

As a companion to the popular Threshold Book, Wooster Products, Inc., Dept. V, Wooster, O., has issued a similar reference that covers practically every type of safety tread application. Comprising 36 pages in handy pocket size, it shows illustrated plates, cross-section drawings, typical installations and specifications for safe-groove and abrasive cast treads as well as expansion plates, platforms, curb bars and floor grids. Various types, metals and surfaces of Ferrogrit, Alumogrit, Bronzogrit and Nicklogrit are described.

72

Ledeen valves illustrated and described

A new bulletin has been issued by Ledeen Manufacturing Co., 1600 S. San Pedro St., Los Angeles 15, Calif. Illustrating and describing the complete line of Ledeen valves, the bulletin includes illustrations, operating and circuit diagrams, and dimensions and weights. Ledeen valves, embodying disc type construction, are used for operating air and hydraulic cylinders, single and double acting, and air motors. They are available in hand, foot, power and solenoid operated models.

73

Pipeline trencher described in new bulletin

A new 4-page bulletin on its Model 320 trencher publisher by Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, O., contains many photographs presenting the 320 in action under all types of job and weather conditions. Text briefly outlines Cleveland advantages and special design features. Complete dimensions and specifications, including a table of optional cutting widths, are also contained in the 2-color folder.

74

A cold plastic sewer joint compound

A 4-page folder on its new improved Sewertite Joint Compound has been issued by the Philip Carey Mfg. Co., Dept. SF, Cincinnati 15, O. Included in the folder is a 4-step pictorial explanation of how to apply the compound. A description of Sewertite and its various uses are also set forth. There is a table of quantities required for bell and spigot joints and tongue and groove pipes.

75

New motorgrader described

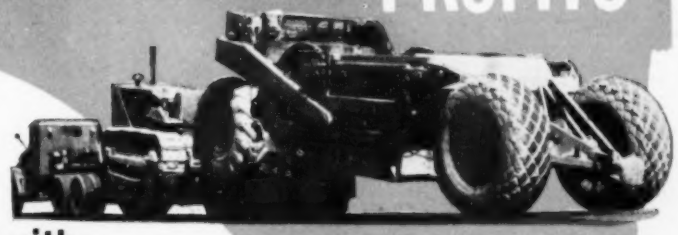
A new 21-page folder on its motorgrader No. 512 has been issued by J. D. Adams Manufacturing Co. This grader now has rubber mounting of the IHC-UD-14A engine and the rated horsepower has been increased from 76 to 85. Important features of the grader are described and specifications are given. Two pages are devoted to illustrations and descriptions of optional equipment that add to the grader's convenience and usefulness.

76

Grid roller applications

A new illustrated catalog describing the features and applications of its grid roller is now available from Hyster Co. One of the applications of this roller is salvaging old bituminous roads. The roller disintegrates the old mat material, compacts the base and rolls the new surface.

"Plus" Payloads for GREATER HAULING PROFITS



...with ROGERS TRAILERS

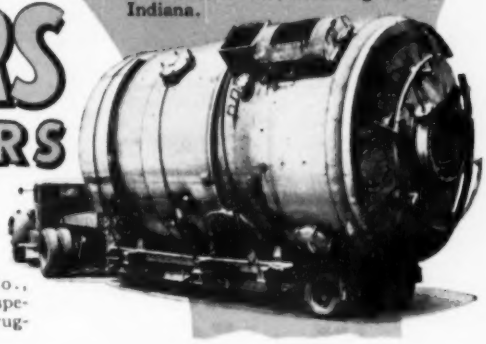


Photo: Courtesy of Ralph Myers Construction Co., Bloomington, Indiana.

The job of hauling this 32-ton Electric Precipitator from Cressona, Pa., to Pottsville, Pa., was taken in easy stride by the Moore-Flesher Hauling Co., Pittsburgh, Pa., with their specialized knowledge and their rugged Rogers Trailer.

Hauling "Plus" Payloads without overloading is not only a possibility, but a relatively common practice by enterprising hauling contractors who rely upon the sturdy backbones of their Rogers Trailers to withstand heavy, bulky loads under strenuous operating conditions.

It's just one of the many reasons why Rogers has been privileged to serve a larger number of "repeat order" customers since the year of 1915 when the first trailer was built.

We'll be glad to discuss your particular handling problem in terms of trailers that will best suit your needs and your pocketbook. Call, write or wire your agent TODAY.

This is the Sign of the Original and Genuine ROGERS TRAILER

This nameplate appears on every ROGERS TRAILER as your assurance of the GENUINE PRODUCT—Made Since 1915

Write for the LATEST CATALOG

EXPERIENCE builds 'em — PERFORMANCE sells 'em

ROGERS BROS. CORP.

ALBION, PENNA. CABLE: BROSITES

110 Orchard Street

Also of timely interest in this ROGERS Tag-A-Long trailer which makes a dump truck serve as a tractor and effects sizeable savings for contractors.

GarWood 75

New Cranes Designed for More "On the Job" Time!

Handle all types of precision steel erecting, concrete work and any crane, clam, magnet or dragline job with the new standard-duty 75A or heavy-duty 75B Gar Wood cranes! . . . Collapsible high gantry simplifies raising of longest booms . . . Pendant cables speed changing of boom lengths . . . Optional *power load lowering* and *fluid coupling* give smoothest possible crane operation . . . Hammer head boom point keeps cable away from boom — gives added boom strength — keeps cable costs low . . . Crane sections pin and bolt connected for rigidity and strength . . . Right angle drive, power actuated hoist clutches and conical hook rollers . . . Easily converted to all attachments including the new, exclusive Gar Wood Foundation Borer!

FOR LIFTING POWER with MOBILITY

A Gar Wood 75BT truck crane will do the job. Lifts up to 40,000 lbs. Has all the heavy-duty features yet gets around fast. Ideal for long boom and steel erection work.

GAR WOOD INDUSTRIES

GAR WOOD INDUSTRIES, INC.

Findlay Division • Executive Offices • Wayne, Michigan

F-532

WITH THE MANUFACTURERS & DISTRIBUTORS

New Distributors for Wood Mfg. Wood Manufacturing Co., North Hollywood, Calif., has announced the appointment of the following distributors: Illinois Contractors Machinery, Inc. of Melrose Park and Peoria, Ill., for Northern Illinois and Lake and Porter Counties in Indiana; Stockberger Machinery Co. of Fort Wayne and Indianapolis, Ind., for the state of Indiana, excluding Lake, Porter, Harrison, Floyd and Clark Counties; and Machinery, Inc., of St. Louis, Mo., for Southern Illinois and Eastern Missouri.

Promotions By Aeroquip. George J. Fischer, heretofore general sales manager, has been elected vice president, sales, Aero Corporation, Jackson, Mich. Matthew J. Bently, formerly works manager, has been elected vice president, manufacturing.

Gar-Bro Sets Up Peoria Branch. Gar-Bro Manufacturing Co., Los Angeles, Calif. has set up manufacturing facilities in Peoria, Ill. for its line of concrete handling equipment. Walter F. Dexter is resident manager.

Allington Promoted. H. C. Allington, heretofore general manager of sales of Wickwire Spencer Steel Division, has been elected vice president in charge of sales of the Eastern Division of The Colorado Fuel & Iron Co. He will supervise sales in the Eastern Division of all products of the corporation and its subsidiaries, including the recently acquired John A. Roebling's Sons Corporation.

Weigel Elected President. Raymond A. Weigel, formerly vice president and general manager of Kysor Heater Co., Cadillac, Mich., has been elected president of the company. He succeeds Walter A. Kysor, founder of the company and its president for the past 27 years. Mr. Kysor, who will remain active in company affairs, was elected Chairman of the Board of Directors.

Herron to go to South Africa. B. J. Herron, manager of the Los Angeles branch of Independent Pneumatic Tool Co., Aurora, Ill., for the past 26 years, has been appointed assistant to the president for special sales development work in Johannesburg, South Africa. Herron's duties in Los Angeles will be assumed during his temporary absence by W. J. Laughlin, former service engineer who has been in charge of Thor New Orleans operations.

New Armco Division Managers. Two new division managers of Armco Drainage & Metal Products, Inc., Middletown, O., have been announced. Tom M. Neibling has been appointed manager of the southwestern division with headquarters at Houston, Tex. He succeeds John Skove, who recently retired. William O. Robertson has been named manager of the eastern division, with offices at Baltimore, Md.

McLouth Retires. Louis McLouth for 33 years advertising manager of Sauerman Bros., Inc., 522 S. Clinton St., Chicago, Ill., has retired. He is succeeded by Melvin O. Martin. Mr. McLouth will remain temporarily with the firm in an advisory capacity.

New Joy Distributors. Franz Tractor Co., 2740 Ewen St., New York, N. Y., and East Coast Equipment Co., Mountainside, N. J., have been appointed distributors for the construction equipment of Joy Manufacturing Co., Pittsburgh, Pa.

Embury Joins Dietz Sales Staff. R. E. Dietz Co. has announced the appointment of William J. (Bill) Embury as sales representative for the New England and North Atlantic States territory, excepting New York City and Long Island. Mr. Embury was production manager of the Embury Manufacturing Co., Warsaw, N. Y., until January 1953, when the Embury assets were acquired by the R. E. Dietz Co.

Thew Promotes Three Engineers. Thew Shovel Co., Lorain, O., has promoted three of its key engineers to newly created positions within the organization. R. H. Zellman has been appointed director of engineering. M. L. Sheetz, chief executive engineer and O. Van Mehren, chief design engineer.

Moroney Appointed Sales Manager. John J. Moroney, well known in the construction machinery field, has been appointed sales manager of Cunningham-Ortmayer Co., distributors, Milwaukee, Wis.

Union Wire Rope Appointment. Frank W. McSpadden will represent Union Wire Rope Corporation in Georgia and North and South Carolina. He will work out of the Jacksonville, Fla., office under the direction of George Golay, district manager.

Grove Joins Reuter & Bragdon. D. Clinton Grove has been appointed to the staff of Reuter & Bragdon, Inc., Shareholders and Financial Public Relations firm, Pittsburgh, Pa. Mr. Grove has been associated with the Blaw-Knox Co. for many years and served the company in the capacity of advertising manager and later as assistant to the executive vice president and consultant to the advertising and public relations department. In his new capacity with Reuter & Bragdon, Inc., he will assist in servicing clients on matters pertaining to management sponsored information.

Strege New President Baker-Lull. Gilbert C. Strege, formerly manager of McBee Company's Technical Division, Milwaukee, Wis., has been appointed president Baker-Lull Corporation, Minneapolis, Minn., manufacturer of construction and materials handling equipment. In confirming the appointment, the board of directors also approved the change in company name from the Lull Manufacturing Corporation. Baker-Lull is a newly acquired subsidiary of The Baker-Raulang Co., Cleveland, O. The parent company produces industrial lift trucks, cranes and tractors.

New Amsco Executives. Gilfry Ward has been appointed president and Joseph L. Mullin first vice president of the American Manganese Steel Division of American Brake Shoe Co.

New Bucyrus-Erie Distributor. Cleveland Brothers Equipment Co., Route 322 (Hershey Road), Harrisburg, Pa., has been appointed distributor of Bucyrus-Erie ⅜ to 4-yd. gasoline, diesel and single-motor electric, general purpose convertible excavators in east central Pennsylvania. The distributor also will handle the truck-mounted hydrocrane and hydrohoe as well as Red Arch dragline buckets.

Charley Hvass Is Dead. Chas. T. Hvass, 63, vice president of E. D. Etnyre & Co., Oregon, Ill., died Jan. 9 in New York City. After serving in the Corps of Engineers in World War I he joined his father and brother in the family business of manufacturing Hvass bituminous distributors and street flushers. This business was dissolved in 1935 and he became eastern and export Sales manager for Etnyre. He was elected vice president of the Etnyre organization in 1942.

Smith Joins Atlas Mineral Products. Martin H. Smith, formerly of Hercules Powder Company, has joined the Technical Service Department of the Atlas Mineral Products Co., Mertztown, Pa.

GarWood 75

A New 3/4 yd. Shovel with Many Exclusive Features!

Gar Wood has designed the *new* "75 series" shovels to combine many new and exclusive operating features with time-tested standards of advanced design and rugged construction . . . Both the standard-duty 75A and the heavy-duty 75B have *power actuated mechanical drum clutches, right angle drive, independent chain crowd, power steering, independent travel, conical hook rollers* to eliminate rocking and an optional *hydraulic coupling* to absorb shock loads . . . Easy field conversion for crane, clam, dragline, magnet, pile driver or trench hoe work . . . Don't miss checking the profit potentials of the exclusive new Gar Wood Foundation Borer — the machine that bores and bells in one operation . . . See your dealer for details —

EASY CONVERSION IS A FEATURE

Your Gar Wood shovel can be quickly adapted for trench hoe work. Digs up to 17'10" depth, dumps at heights up to 19'3". Standard 40" dipper. 36", 31" and 26" widths optional.

GAR WOOD GW INDUSTRIES

GAR WOOD INDUSTRIES, INC.

Findlay Division • Executive Offices • Wayne, Michigan

F-533

TO THE CONTRACTOR *and* HIGHWAY ENGINEER

FOR years highway engineers have been working toward the elimination of road forms, and at the same time building a road that was known to be definitely level on both sides of the longitudinal joints.

Accuracy could be obtained at the shoulders with a line. The thickness of the course could be ascertained with a gauge but a line at the center of the road for establishing an absolute level was obviously impractical. Up to now, even with the most modern equipment, to arrive at any approach to accuracy in maintaining the level of a black top course over its full width was no more than a reasonably good guess. Matching devices can assure that one course will match the other course at the joint. In other words, both parallel courses will be the same depth where the courses abut, but the course at any given point may have a roll in it.

The shoulder remains true because of the line —The longitudinal joint can be tight—But, the center of the road is veiled in mystery insofar as its level qualitites are concerned. There has been no means to correct the roll and dips that won't show under a straight edge.

Now, for the first time in the history of paving this situation can be corrected and it is possible for the contractor and Highway Department Engineers to know exactly what the condition of the road surface is insofar as its level characteristics and slope are concerned.

The direct-lift, one-piece-unit Cutter Bar Screed of the Adnun Black Top Paver has made possible the application of a Fluid Level to black top paving. The Fluid Level can be used either with a line for a primary setting along the edge of the road or without it. A simple, accurate device, it serves the purpose of leveling up a road course just as a carpenter uses a level to level up a structure. It permits correcting for any desired slope at any station. It permits holding an absolutely level grade without modifying the desired crown. It permits leveling up old shoulder and blending it into the crown, but most important of all it takes out the dips that won't show under the straight edge and it gives you absolute control of the laying of the *center of the road.* With the Adnun Fluid Level you both match and joint and *take out all the undulations on each side of the joint!* Your road is as level and true at the center as it is at the shoulder.

The Adnun Fluid Level should be standard equipment on every black top spreader. It means better, smoother, longer life roads for the State and County. It means less waste of material, smoother running jobs and better work acceptance for the contractor.

The season is opening! Now is the time to get the full story on this Adnun device. *Write for details.*

ADNUN
TRADE MARK REGISTERED
BLACK TOP PAVER

BLAW-KNOX

FOOTE CONSTRUCTION
EQUIPMENT DIVISION
OF BLAW-KNOX CO.
1936 State Street,
Nunda, New York

WHAT'S NEW...

in Construction and Road Building Equipment, Materials and Supplies

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"Drake Dreadnaught" in recent test at Gravling National Guard Airport in Michigan. In the test, the plow cleared a fluffy, 4-in. snowfall from the 6300 ft. runway in less than seven minutes, traveling at speeds up to 35 miles per hour and cutting a 31 ft. swath in each pass.

New Crushing Plant Designed for Mobility

1

A new line of single pass, portable crushing plants has been announced by Diamond Iron Works, Inc., 1748 North Second St., Minneapolis, Minn. Called the "100 Series", the three plants have capacities from 30 to 70 tons per hour. They are designed for use in crushing operations where mobility counts. A complete unit, ready to go, can be provided with either gasoline or diesel power. A new, low hopper height (10 ft. 4½ in.) gives greater ease of loading; a hinged delivery conveyor makes it unnecessary to dismantle for towing. Heavy duty steel grizzlies on the hoppers have openings designed for the highest crusher production with the minimum amount of scalping. Adjustable single eccentric plate feeders provide a constant, even flow of pit run to the scalping screens and plants proper. Hoppers are easily loaded with ½ or ⅜ yd. shovels.

Circle the number of this item on the post card to get additional information

"100 Series" Crushing Plant

New Rotary Designed to Move 13,000 Cu. Ft. Per Min.

2

A 30-ton, three engine machine, designed to remove 13,000 cu. ft. of snow per minute and spray it 800 ft. away has been announced by Drake American Corp., New York, N.Y. Designed primarily for clearing airport runways the machine is powered by a 2540 h.p. aircraft engine to draw in the snow and blow it to the side; another engine to cool the main engine and operate all its accessories, and a third to actually run the heavy truck on which the snow-clearing unit is mounted. It takes two men to operate the machine. Trial snow-removal runs are also being made with a smaller version of the machine which can be pushed by a conventional truck.

Circle the number of this item on the post card to get additional information

Portable Asphalt Barrel Heater and Storage Tank

3

A new combination portable asphalt barrel heater and storage tank, announced by K. E. McConnaughay, Lafayette, Ind., is illustrated herewith. The heater shown will accommodate 24 bbls. in the upper heating chamber, and 3000 gal. of materials in the lower storage reservoir. The gasoline engine driven bituminous pump (lower left) is used for "recirculating" to increase the speed of heating and to discharge the contents of the reservoir into pressure distributors, kettles, supply tanks, etc. Pipe coils are used for heating, and either steam or hot oil may be used in the coils. Heater is equipped with thermometer, and barrel lifting and loading hoists and davits, as illustrated. Unit can be supplied on skids or pneumatic tired trailer mounting.

Asphalt barrels are placed in heater

Combination Asphalt Barrel Heater and Storage Tank

WHAT'S NEW . . .

in an inverted vertical position, with bungs removed, on an open grid. As asphalt heats and melts, it runs through the grid into the heated storage tank under the grid, where it is kept hot until used. Heaters are made in various barrel capacities of 6, 12, 24 bbl. at one time, and the built-in storage tank can be had in capacities of 500, 1000, 2000 and 3000 gal. These barrel heaters were especially developed for the export market, where the heating of drums to enable the rapid and thorough removal of asphalt has always been a difficult problem.

Circle the number of this item on the post card to get additional information

Flasher Collapsible Barricade Light Unit

4

A new neo-flasher barricade light unit has been introduced by Light Products, Inc., Dept. NBU, 407-e Commercial Center Sts., Beverly Hills, Calif. This unit is specially adapted to mount the Neo-Flasher Model 1-100LSR (the all-directional warning light) or the Model 4-100LSR (directional warning light). It comes complete with the locking device,

Collapsible Barricade Light Unit

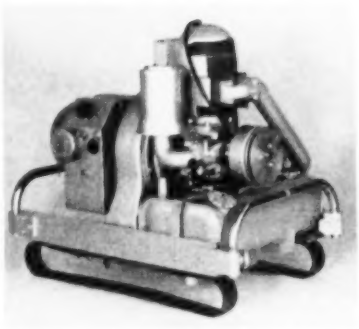
tamper-proof switch, and a flag. This barricade light unit is collapsible and conforms to meet all traffic control specifications. The unique design of the barricade and the light is such that when the light is mounted on the barricade, it prevents theft. A simple turn of the switch, and it runs constantly for up to 30 days and nights without replacing the battery.

Circle the number of this item on the post card to get additional information

Generator Built to Withstand Roughest Use

5

A new dual-voltage 5 kilowatt carryable generator, has been announced by Homelite Corporation, 67 Riverdale Ave., Port Chester, N. Y. The new generator, Model 32A115/230-1, will carry a continuous load of 5,000 watts, single-phase, 60 cycle alternating current at either 115 or 230 volts. It is a carryable generator



New Homelite Generator, Model 32A115/230-1

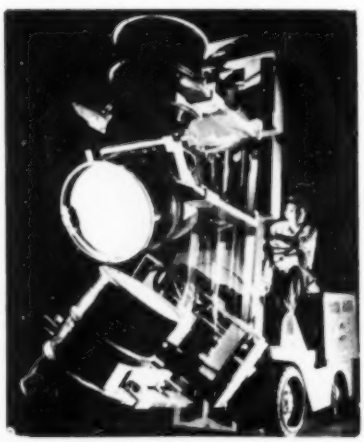
with enough power to start and operate a variety of electric tools and equipment, also to serve for emergency lighting and stand-by power. A 115 volt AC standard convenience outlet is supplied, together with a special waterproof 3-pole receptacle for connecting either 115 or 230 volt motors, tools and appliances. Driven by a Homelite Model 32 gasoline engine, the generator has specially impregnated armature and coils to give high resistance to oil, moisture, and abrasive dust. For maximum compactness, the armature is keyed directly to the one-piece, drop-forged, engine crankshaft; and the large size carbon brushes are easily accessible. Voltage regulation from no load to full load is approximately 4%.

Circle the number of this item on the post card to get additional information

Fork Lift Truck Handles Many Types of Loads

6

Development of the "Octopus", a 4000 lb. capacity fork lift truck outfitted with a special carriage and attachments to handle nearly a dozen different types of loads, has been announced by The Baker-Raulang Co., 1230 West 80th St., Cleveland 2, O. The assortment of loads is



Baker "Octopus" Handling 500 lb. Drum Multiple Exposure Illustrates Variety of Handling Motors

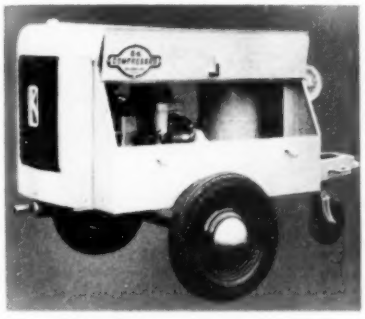
handled non-stop, with just two short pauses for adjustments to the carriage and forks. The "Octopus" is a standard battery-powered fork truck equipped with the Baker 4-purpose carriage. It uses four attachments: a revolving head (semi-permanent), drum clamps, hydraulic drum up-ender and clamp-spikes (all detachable in two minutes).

Circle the number of this item on the post card to get additional information

New 75 c.f.m. Portable Air Compressor

7

A new 75 c.f.m portable air compressor for standby service or direct production jobs has been announced by the O.K. Clutch & Machinery Co., Florence St., Columbia, Pa. This new model will be known as the Hornet "75". It weighs only 1280 lbs., and can be towed at high speed behind a passenger car. It uses a 6-cylinder Chrysler engine which has been rebuilt for compressor service. Power from three cylinders of the engine are used for air compression and the other three for power. The unit is mounted on a three-wheel streamlined trailer and the pivot wheel is retractable. Large lockable tool boxes are lo-



Hornet "75" Compressor

cated on each side of the trailer. Tests have shown that the new model will handle a 45-lb. paving breaker, a 45-lb. rock drill, or two backfill tampers, or two clay spades, or two riveting guns, or any combination of two small tools.

Circle the number of this item on the post card to get additional information

New Crane Provides 20% More Lifting Capacity

8

A new heavy-duty truck-mounted shovel-crane, providing 20% more lifting capacity than previous Bantam models, has been announced by the Schield Bantam Co., Waverly, Ia. Conservatively rated at 6 tons capacity, the new ⅜-yd. heavy-duty Model T-35 is already in full production, with a complete line of matching attachments, including shovel, clamshell, dragline, back hoe, magnet, wood grapple and pile drive. Major improvements over previous Bantam Model M-49 machine include: a stronger main frame with 54% increase in section modulus; larger shafts and bearings throughout; bigger diameter center pin; newly designed trunnion base with wider

WHAT'S NEW . . .

New 6-Ton Capacity Bantam Model T-35

trunnion rollers and the use of 4 adjustable camtype hook rollers instead of three. The T-35's vertical swing shaft bearing allows for almost twice as much radial load on the shaft, compared to the M-49 Model.

The new Model T-35 offers more efficient performance because of substantial increases in both clutch and braking surfaces. Drum clutch surface in the T-35 has been increased 36.3%, swing clutch surface increased 45.5%, resulting in smoother, faster clutching action. A 39.3% increase in drum braking surface plus 13.1% additional boom hoist braking surface in the Model T-35 provide extra safety and better load handling accuracy. A power boom hoist which gives power lowering as well as raising is retained as standard equipment in the new heavy-duty Model T-35.

Circle the number of this item on the post card to get additional information

Front End Loaders Have New Construction Principle

9

Two new 4-wheel planetary drive, 4-wheel power steering front end loaders, the Scoopmobile Models LD5 and LD10, have been announced by Mixermobile Manufacturers, 8027 N. E. Killingsworth St., Portland, Ore. LD5 capacity, ¾ to 1 cu. yd., LD10 capacity, 1⅝ to 2 cu. yd. Claimed to feature an entirely new development in smooth, flexible power, these Scoopmobiles employ a new principle of construction by hinging two power axle elements together with an oscillating center-pin steering coupling. This coupling allows an oscillating twist to the axles, retaining full power on all 4 wheels in any degree of the turning radius. Power from engine is transmitted to all 4 wheels through 3-to-1 planetary gearing. Hydraulically operated loading bucket is stated to have exceptional "break out" action resulting in better and faster loading. Hinged coupling steering allows excellent lateral spotting of bucket. Discharge height: LD5, 8 ft. 6 in.; LD10, 9 ft. Reversing transmission has 8 speeds forward and back. Diesel power optional at extra cost.

Model LD 5 Scoopmobile

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New I-H Trucks Have 168 Basic Chassis Models

10

A completely new line of light, medium and heavy-duty motor trucks, introduced by International Harvester Co., 180 N. Michigan Ave., Chicago, Ill., has 168 basic chassis models in 296 wheelbases, with gross vehicle weight ratings from 4,200 lb. to 90,000 lb. There are 29 engines—gasoline, LPG and diesel whose horsepower ratings range from 100 to 356, and a wide selection of transmissions, auxiliary transmissions, axles and axle ratios. A total of 307 new features have been incorporated in the new line. Exterior styling has been redesigned. Front end sheet metal is more functional, permitting greater air intake for more efficient cooling. The interior of International's roomy Comfo-Vision cabs, deluxe, sleeper, Space-saver and Tilto-cab types, with new instrument cluster and ignition-key starter switch is finished in beige and Tile Red. Green-tinted, nonglare safety glass is optional. New cab mountings provide a more stable ride.

International RF-212 Loadstar Model With Heavy-Duty Dump Body

Among other new features on certain models of the International line are duplex-valve-type shock absorbers, visible-flow carburetors with fast-idle cam, downdraft carburetion, improved hydraulic brakes and optional light-weight self-contained air brakes, increased capacity universal joints, stronger rear axle pinion bearing shaft, relocated fuel tank and filler spout to accommodate specialized skirted bodies, new steering knuckle spindles and strengthened engine front support brackets.

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Indicates Low Pressure On Air Brake Systems

11

A new Wig-Wag, the air operated low air pressure indicator, has been announced by Monroe Standard, Inc., Wyandott Bldg., Galion, O. The new model retains the same design and method of operation as previously, but it has been streamlined by the use of die castings in the body of the unit and a one-piece signal arm. The Wig-Wag is installed without electrical connections, and unsafe air pressure releases the Wig-Wag directly in drivers field of vision. The Wig-Wag arm arouses the driver to immediate action. Since it is not a gauge it fully complies with the new I.C.C. requirements.

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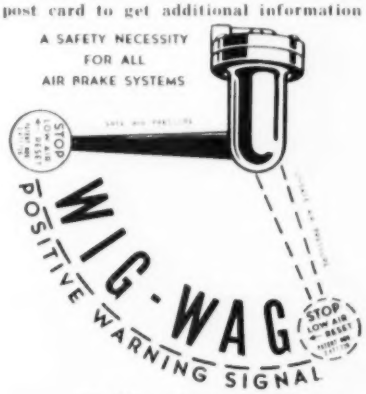


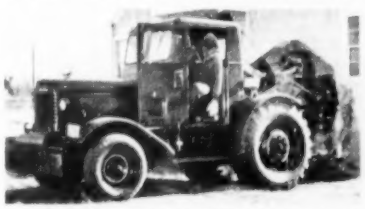
Wig-Wag Warning Signal

Ditcher Features New Bucket Line-Fluid Coupling

12

A new "Runabout" ditcher, the Model 705-B, has been announced by Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill. The new design adds a complete fluid coupling to the fully field-proven "Hydra-crowd" hydraulic transmission which was a feature of the predecessor Model 705-A. A second innovation is the design of a special curved-tooth bucket line stated to greatly increase digging efficiency and to assure more than double the normal digging tooth life.

A heavy duty Chrysler industrial engine transmits its power through a Chrysler fluid coupling, to the special "Hydra-crowd" transmission. The digging mechanism is, therefore, protected at all times, by a constant hydraulic cushion that eliminates shocks, surge



Barber-Greene Model 705-B "Runabout" Ditcher

WHAT'S NEW . . .

loads, and permits application of full engine horsepower to the task of digging.

With the fluid coupling, when underground obstructions present too much resistance to the bucket line, the coupling simply slips and the bucket line stops. Another refinement of design in the hydraulic drive mechanism is a counterbalance valve which provides positive elimination of "run-away" tendency when the machine is digging on a downhill slope. The valve maintains constant crowding speed, resisting gravtiational pull on the machine. The digging range of the Model 705-B "Runabout" ditcher is 5½, 7½ and 10½ in. in width and to a maximum depth of 4 ft.

Circle the number of this item on the post card to get additional information

Fork Lift Truck with Snow Plow Attachment

Snow Plow Attachment For Fork Lift Truck

13

A new snow plow attachment for its heavy-duty fork lift trucks has been announced by Tracto-Lift Co., 800 E. 18th St., Kansas City, Mo. The attachment is available in two models: the V-type cutting a swath of 60 in. and the angle type. The latter is 84 in. long and is adjustable to a wide range of angles.

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McGee Scraper Has Three New Features

14

A new McGee scraper, Model 5021, designed for Ferguson and Ford tractors has been announced by Earth Equipment Corp., 2036 Sacramento St., Los Angeles 21, Calif. Three new features are incorporated in the new model: improved hydraulic upper link; the top hook-up has been raised to give longer life to scraper, hydraulic upper link, and tractor; and the new model comes with either 6 or 9 scarifying teeth. With the exclusive self-contained hydraulic upper link, the operator—with a touch of the control valve—can adjust the tilt of the scraper for scraping, back-filling, scarifying, or scarifying and scraping, changing from one operation to another, without getting off the tractor. The bucket capacity is approximately ¾ cu. yd. Both cutting and backfilling blades are 5 ft. 6 in. wide. The rear or backfilling blade is adjustable.

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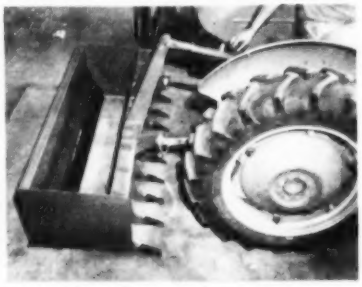


Model 5021 McGee Scraper

8000 lb. Trailer Has 27 Ton Capacity

15

A new trailer added to the line of Martin Machine Co., Kewanee, Ill., is built throughout with high strength alloy steel. The trailer weighs less than 8,000 lb., yet has a payload capacity of 27 tons. The trailer was primarily designed to haul equipment in the Caterpillar D8 weight class, and still remain within legal axle load limits in most states. The high strength alloy steel has reduced dead weight to a minimum. The frame, fabricated of structural members, is electrically welded. The trailer has an 8 ft. x 13 ft. platform, with an over-all length of 27 ft. 7 in. from kingpin to

Model R4TL Alloy Steel Trailer

extreme rear. This trailer also features the patented Martin tandem axle.

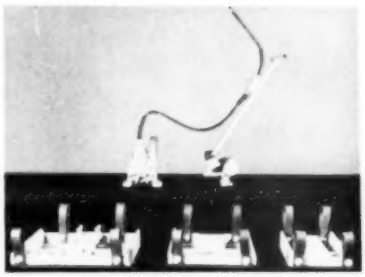
Circle the number of this item on the post card to get additional information

Quickly Interchangeable Bases for Jackson Compactor

16

Quickly interchangeable bases, now offered in any width from 12 in. to 24 in., for the vibratory compactor of Jackson Vibrators Inc., Ludington, Mich., are stated to provide exceptional flexibility and quick adaptation to a very wide range of compaction jobs.

Since there are just three component parts involved, switching bases requires just a few minutes work, and consequently, with suitable bases, the same machine can be used to full potential in



Interchangeable Bases and Other Component Parts of Compactor

compacting granular soil in trenches as narrow as 12 in. compacting sub-bases for concrete floors, fills of granular soil such as for bridge approaches, pipe lines, etc., blacktop highway patching and widening, paving drives, walks, railway platforms and street crossings and many other operations. The machine is self-propelling, requiring only guidance on the part of the operator, and it is claimed maximum density of blacktop or granular soils at optimum moisture can be achieved with it at the rate of 2400 sq. ft. per hour.

Circle the number of this item on the post card to get additional information

New Lorain 45-Ton Crawler Crane

17

A new Lorain 45-ton crawler crane has been announced by The Thew Shovel Co., Lorain, O. This is a companion machine to the 45-ton Lorain Moto-crane, Model MC-824. The new model is designated as Lorain 820-KS and consists of a diesel powered turntable with hydraulic coupling power take-off mounted on a newly designed, extra long, extra wide crawler. Air assist on boom hoist and crawler travel are standard. High-speed, double-threaded, worm-driven boom hoist with ratchet and pawl safety lock are features especially incorporated for crane work. The crawler is of 2-speed, chain-drive type, 18 ft. 6 in. long and 14 ft. 2 in. wide with 48 in. wide cast manganese steel tread shoes. The crawler steering and tread-travel lock have full air control, with auxiliary manual controls. This larger crawler provides greater stability and easier soft-ground travel with its ground bearing area of 18,984 sq. in. A new 2-piece, pin-connected boom of larger cross sections, more

Lorain 820-KS Crawler Crane

WHAT'S NEW . . .

sturdily constructed, is provided on the Lorain 820-KS crane. With it is used a power operated, tilting and folding type high gantry and a floating harness for reeving 6-parts of boom hoist cable. Center sections in 10 and 20 ft. lengths are available to lengthen boom to 100 ft.

Circle the number of this item on the post card to get additional information

Typewriter Designed for Use of Contractors

18

A new printing calculator, announced by Remington Rand, Inc., 315 Fourth Ave., New York 10, N.Y., provides "figure-fact" efficiency for contractors. Use of

Printing Calculator for Estimating, Figuring Costs, Etc.

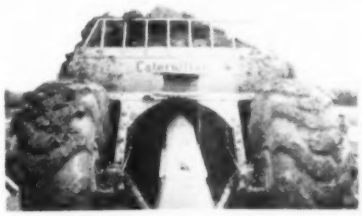
the printing calculator is claimed to assure top figuring speed for estimating, figuring costs, payroll computations, insurance records, extension of bills, tax computations, etc. The printing calculator combines short cut multiplication and automatic division with high speed listing, adding and subtraction, and gives printed proof of every factor on tape.

Circle the number of this item on the post card to get additional information

Ejector Extensions Available for Caterpillar Scrapers

19

Caterpillar Tractor Co., Peoria 8, Ill., has announced that ejector extensions are now available for five models of Caterpillar scrapers. The extensions are designed to increase loading efficiency and decrease loading time. The extensions, available as attachments for the No. 80, No. 20, No. 21, No. 70 and No. 15 Scrapers are made of steel bars welded together and attached to the top of the ejector. Scrapers equipped with ejector extensions are stated to be particularly valuable when working in moist, sticky soils that have a tendency to peel up into slabs and break over the back of the ejector. The extension reduces spillage, and thus lessens the chance of cable fouling.



Ejector Extension on Caterpillar No. 21 Scraper

By the same token, loading time is reduced. Attaching ejector extensions to the scraper will not hinder shovel or dragline loading.

Circle the number of this item on the post card to get additional information

New Trailer Dump Has 20 Cu. Yd. Capacity

20

A new 20 ft. long, 20 cu. yd. capacity package trailer dump has been announced by The Galion Allsteel Body Co., Galion, O. Dumping is handled by a Galion Model 77380 hoist. This consists of two 3-section 7 in. telescopic units.

Galion Heavy Duty Model 10

Rated hoist capacity is 22 tons. The tandem axle trailer has a specially designed heavy duty dump trailer suspension. Trailer utilizes a straight top frame with ample section and roll to support the most rugged operation. It is available with either hose operation or power fifth wheel, as desired. Tire sizes and brakes are available in several options to meet load and service requirements.

Circle the number of this item on the post card to get additional information

Low-Priced Dozer-Loader Unit

21

A new combination dozer-loader designed to give the user a low-priced unit, which can be put on a regular crawler tractor (no modifications) is being manufactured by Teale & Co., Dept. L, P.O. Box 308, Omaha, Nebr. The dozer-loader can be readily put on or taken off, so the tractor can be used for other type of work. Ruggedly constructed, the dozer-loader can be quickly installed by bolting to the mounting positions on all crawler tractors. The manufacturer states that the dozer-loader is specially designed to fit close to the front of tractor for better leverage and lifting power. The front edge of the bucket can be lowered to a point below the tractor tracks making it possible to clean up ahead of the tractor. Bucket raises to a height of 8½ ft. when dumped at this height an automatic "bump" on the bucket cleans out sticky soil and similar material. Raising and lowering is handled hydraulically from the tractor seat.

Circle the number of this item on the post card to get additional information

Combination Dozer-Loader Unit

Vehicle Actuated Traffic Controllers

22

Two new lines of vehicle-actuated traffic controllers, each having standard interchangeable jack-mounted components, have been announced by the General Electric Company's Lighting and Rectifier Department, Schenectady, N. Y. Unitized jack-mounted component assembly is a feature pioneered in the G E Type F controller.

Circle the number of this item on the post card to get additional information

Barricade Easy to Handle Easily Seen

23

A barricade designed to meet all traffic problems has been placed on the market by Underwood Patented Barricade, Inc., 215 N. Avenue F, Crowley, La. The barricade is all in one unit and is made of steel tubing. The flares at each end burn several days without refueling, the steel tube, at the top being the oil container. The sign is illuminated with Scotchlite reflective sheeting.

Underwood Barricade

WHAT'S NEW . . .

MANUFACTURERS' LITERATURE

What You Should Know About Diesel Engines

24

An unique and informative new 22-page booklet on diesels, written in simple, non-technical language, has been published by the P&H Diesel Division, Harnischfeger Corporatiin, Crystal Lake, Ill. Entitled "What You Should Know About Diesel Engines," it effectively calls upon the grade school "primer" technique for both telling and illustrating the diesel story. Its main objective is to show just how simple the modern diesel engine is and how easy it is to understand its operation. The booklet records the diesel engine's invention and early development; compares it with the gasoline engine; tells about the 2-cycle and 4-cycle types of diesels; explains its operation in simple pictures and words; and reports latest advancements in modern diesel engine design.

Marion 4-Yd. Shovel Described in New Bulletin

25

A new, 12-page, 2-color bulletin describing the Marion 111-M diesel shovel, with 4 cu. yd. dipper, announced by the Marion Power Shovel Co., Marion, O., is illustrated with photos of the 111-M in practically every material handling application. The unit is available as standard shovel, long range shovel, or dragline. Outstanding features include Ward-Leonard electric swing and Marion air control. Other features mentioned in the booklet are: Compact, accessible machinery deck; heavily-built upper frame; rugged machinery assemblies; independent boom hoist (optional); and lower frame strength. A choice of two diesel power units is available. A new type rigid gantry is also featured on the 111-M.

Construction Uses For Water Hose Described

26

A new 4-page catalog on its water hose has been published by The B. F. Goodrich Co., Dept. R-S, Akron, O. In addition to hose for general water service, the catalog describes types of water hose designed for specialized uses. These include long length, heavy duty hose for construction projects, road building and other high pressure uses; large diameter hose for high pressure water and air service in pile-driving operations, hydraulic bank grading, stripping and sluicing and for heavy duty service in mines and quaries where abrasion on cover is severe.

Bulldozer and Attachment Described in New Catalog

27

A new 36-page catalog (Form 30461) of Caterpillar bulldozers and their attachments published by Caterpillar Tractor Co., Peoria, Ill., contains model views showing every size and style of bulldozer made by Caterpillar and cutaway views illustrating their features. Brief specifications are printed with each model view but two pages in the back of the book are devoted to detailed specfications of all Cat bulldozers made for both track-type and wheel-type tractors. Important components of hydraulic and cable controls necessary for Caterpillar dozers also are pictured and their manufacturing processes briefly discussed. Bulldozer attachments, such as the brush, root and rock rakes, the treedozer and the stumper manufactured by Fleco exclusively for Caterpillar, are also discussed in the catalog.

Heavy Duty Rotary Pumps Covered in New Bulletin

28

A new bulletin (W-483-B2) on its heavy duty rotary pumps has been issued by Reciprocating Pump Division, Worthington Corporation, Harrison, N. J. Covering both the herringbone gear type, with capacities to 5,600 gals. per minute, pressures to 100 lb. per square inch; and the sliding-vane type, with capacities to 1,000 gal. per minute, pressures to 200 lb. per square inch, the bulletin is complete with fields of application, coverage charts, mountings and dimensions. Engineering data in the new bulletin include a viscosity conversion table, Relation of A. P. I. hydrometer scale to specific gravity, and a viscosity-temperature chart for fuel oils.

"Ottawa" Heavy Duty Backhoe

29

A 4-page circular on its "Ottawa" heavy duty backhoe has been issued by Ottawa Steel Products, Inc., Ottawa, Kans. This backhoe is designed for use with J. I. Case Co. industrial tractors. It digs trenches 12 in. to 36 in. wide and 8 ft. deep. It has only two levers to do four operations. Circular shows backhoe in several operating positions and gives specifications and other information.

New Book Shows Complete Euclid Line

30

A new 48-page book covers all the types of earthmoving equipment manufactured by the Euclid Road Machinery Co., Cleveland 17, O. It also contains information on the selection of the proper type of equipment for various types of work and explains the manner in which twin-power, the use of two engines powering separate axles, is employed in some models. The complete line of Euclid rear-dumps, bottom-dumps, scrapers and loaders are illustrated along with job views of them at work. Brief specifications and typical performance figures are given for the various models and individual design features explained.

Engineering and Surveying Instruments

31

A 16-page condensed catalog describing its engineering and surveying instruments has been issued by C. L. Berger & Sons, Inc., 37 Williams St., Roxbury, Boston 19, Mass. Included in the catalog are sections on the general characteristics and optical systems of the instruments. Illustrated and described are five styles of engineers' transits, five styles of engineers' levels, three styles of mining transits and three styles of theodolites. Berger collimaters and Berger builders and contractors' instruments are also illustrated and described.

Friction Parts For Earth Moving Equipment

32

Four new individualized catalogs, covering complete replacement and installation data on friction parts for earthmoving equipment, have been announced by The S. K. Wellman Co., 200 Egbert Rd., Bedford, O. One catalog lists Velvetouch parts for Allis-Chalmers equipment, another covers Caterpillar applications, a third shows International-Harvester parts, and a fourth is devoted to Le Tourneau. Listings include complete make and model information, parts specifications, ordering instructions and installation data.

Chemical Weed and Brush Control Products

33

A 4-page folder on its chemical weed controller has been issued by Brulin & Co., Inc., Dept. 00615, 2939 Columbia Ave., Indianapolis 7, Ind. Four types of weed and brush control products and their applications are presented. Brulin nonselective weed killer for high efficiency, low cost destruction of all types of vegetation; Brulin brush-off for selective extermination of tough species such as maple, ash and oak; Brulin's dual purpose weed control for use where there is danger of spray drift injuring adjacent vegetation; and Brulin 2 4-D liquid weed killer for control of a large variety of weeds without injury to most types of grass.

Wire Rope Recommendations for General Contractors

34

An informative 16-page Wire Rope Recommendations booklet for general contractors—has been announced by the American Cable Division, American Chain & Cable Co., Inc., 729 Connecticut Ave., Bridgeport, Conn. Printed in two

WHAT'S NEW . . .

colors, and fully illustrated, this booklet was designed with a definite purpose in mind; that of recommending the "one best wire rope" for each major type of equipment used by contractors. For example, wire rope recommendations are included for: bulldozers, back fillers, angle dozers, skimmers, etc., all such equipment covering the intricate phases of construction. The "one best wire rope" for use with each is specified, in a logical and comprehensive sequence.

New B-G Model Ditcher Described

35

An attractive 8-page, two-color folder (Bulletin 705-B) by Barber-Greene Co., 400 N. Highlane Ave., Aurora, Ill. describing their newly announced Model 705-B "Runabout Ditcher." The 705-B is a wheel mounted unit especially designed for use by contractors, utilities and governmental bodies.

A full double-page spread is devoted to description of the three principal features of the machine: a Chrysler fluid coupling which is combined with the fully hydraulic "Hydra-Crowd" digging transmission which was a feature of the predecessor, Model 705-A; and the special curved tooth bucket line. A unique "worm's-eye" view of the machine gives a graphic illustration of many additional features. A number of interesting facts relative to operating costs, together with useful data on the 705-B's digging range (5½ in.-7½ in. and 10½ wide by 48 in. deep), digging speeds, ratios of pipe sizes to trench widths, etc., are contained in the booklet.

Crawler or Rubber Mounted Crane

36

A comprehensive catalog (192) on its Type WB crawler or rubber mounted crane has been issued by Insley Manufacturing Corporation, Indianapolis 6, Ind. One section shows the Type WB at work on jobs; other sections give descriptive matter, illustrations and general specifications of various features of the crane. Diagrams showing the working range of the crane with crawler mounting and with lorry mounting are included. A working range diagram for the machine operating as a dragline is also shown.

Sand and Gravel Washing Equipment

37

The Eagle line of sand, gravel and ore washing equipment is covered in a 40-page catalog published by Eagle Iron Works, 117 Holcomb Ave., Des Moines, Ia. Construction features are pictured and described and specifications are given. General installation dimensions are included as well as a gallonage chart.

New Wire Rope Sling and Fittings Handbook

38

A new 64-page handbook on Leschen slings and fittings is now available from the A. Leschen & Sons Rope Co., 5909 Kennedy Ave., St. Louis 12, Mo. It is printed in a handy 4¾ x 6½ in. size—for convenient reference on the job or in plant offices. It contains more than 100 illustrations, showing standard wire rope slings, grommet slings and multiple part slings, the latter including flat-laced, hand-braided slings. Charts show correct calculations for determining the size of slings required, and correct sling angles in relations to loads. The new line of Red-Strand 8-part braided slings is featured in the handbook, along with the money-saving pin-lock thimbles.

Road Construction and Maintenance Equipment

39

An 8-page circular on Adams Road Machinery has been issued by J. D. Adams Mfg. Co., Indianapolis, Ind. It contains illustrations of Adams motor graders on many types of jobs. Five models of motor graders are illustrated and described and specifications are given. Optional equipment that adds to the graders' usefulness and convenience are pictured and described. A section is devoted to the Adams TraveLoader, a self-propelled, self-feed, belt-type machine that loads from windrows or stockpiles. Two models of Adams pull-type graders are covered in the circular.

How to Obtain a Good Concrete

40

The theory and practice of obtaining a good concrete is the subject of a new booklet, "Plastiment Concrete Densifier," published by Sika Chemical Corporation, 35 Gregory Ave., Passaic, N. J. Beginning with the gel mechanics of cement-water reaction, the booklet discusses the factors affecting cement hydration and basic quality of concrete, and how these factors can be controlled to reduce cracking and increase concrete hardness and impermeability. The booklet covers 8 pages of engineering information, illustrated with drawings, tests, photographs and descriptions of outstanding engineering projects constructed with Plastiment concrete.

Principles of Power Shovel and Crane Operation

41

A series of eight articles discussing the "Use and Application of Power Cranes and Shovels" has been compiled under one cover by the Koehring Co., 3026 West Concordia Ave., Milwaukee 16, Wis. and made available for general distribution. The articles originally were written by E. O. Martinson, Koehring Co., vice president in charge of engineering.

The 32-page booklet contains a detailed discussion on the basic principles of power shovel and crane operation. Aided by numerous photographs, drawings, graphs, and tables, the capabilities of various excavator and crane attachments are outlined along with prescribed requirements for most efficient operation of these machines. The details involved in making a proper selection of this equipment for ordinary operating situations also are discussed in detail. Published under the auspices of the Power Crane and Shovel Association, the articles appeared serially in Construction Methods and Equipment.

Spigot Type Nozzle for Spray Bars

42

The Fraco spigot-type nozzle for spray bars is illustrated and described in a leaflet issued by the Fraco Manufacturing Company, Route 2, Bloomville, O. It is stated that these positive action nozzles always give an exact spray, constantly the same. They are easy to install on any Fraco full circulating spray bar. Volume of spray can be changed easily by replacing nozzle head with one of desired size.

Overhead Eccentric Jaw Crushers

43

A new 4-page bulletin on its Universal series "WRB" welded steel base overhead eccentric Jaw Crushers has been released by Universal Engineering Corporation, 625 C Ave., N.W., Cedar Rapids, Ia., a subsidiary of Pettibone Mulliken Corporation. Profusely illustrated and complete with detailed information, Bulletin U526 describes the eleven sizes from a 10 in. x 16 in. to the 30 in. x 42 in. now available for gravel, rock and ore crushing.

New 1½ In. Lightweight Self-Priming Pump

44

A bulletin on a newly designed 1½ in. self-priming centrifugal pump has been issued by Carver Pump Co., Muscatine Ia. It illustrates and describes this versatile, gasoline engine driven pump which is extremely portable and very easy to carry by one person. It will handle 6000 G.P.G. at 17 ft. suction lift (including friction) against 17 ft. total head and will prime in less than 30 seconds with pump 10 ft. above water. It weighs 55 lb.

Heavy Duty Hydraulic Controlled Hoist

45

A circular on its Model 2510-H heavy duty hydraulic controlled hoist has been issued by King Manufacturing Corp., 3146 W. Chicago Ave., Chicago, Ill. Specifications, illustrations and descriptive matter are included. This all-purpose hoist for construction, industrial and dock use is claimed to be exceptionally suited for hauling, dragging and other heavy duty work.

Armored Flexible Shaft Concrete Vibrators

46

A new catalog on its line has been issued by Wyzenbeek and Staff Inc., Chicago, Ill. Illustrated and described are three models of gasoline engine vibrators. Specifications are given for the 1½ hp, 3 hp and 4 hp gas engine vibrators. Accessories are listed and described and a page is devoted to concrete, terrazzo and contractors' grinders.

WHAT'S NEW . . .

CURRENT TRADE LITERATURE

Listed below are brief notes on bulletins, booklets, catalogs, brochures and circulars of particular interest to contractors and engineers. This current trade literature is yours for the asking. Just circle the numbers of the desired items on the Readers Service Card and mail. We will do the rest.

81 ROCK DRILLING EQUIPMENT: Ingersoll-Rand 40-page catalog illustrating and describing compressors, rock drills and air tools. Contains suggestions as to how compressors and tools may be combined for the most efficient and economical operation.

82 MAGNET REEL AND TAGLINE: McCaffrey-Ruddock Tagline Corp. 16-page bulletin on installation, operation and care of Rud-O-Matic magnet reel and tagline. Describes methods for stepping up efficiency in magnet operations and gives data on use of tagline with clamshell bucket.

83 DIESEL ENGINE PROTECTION: Winslow Engineering Co. 4-page circular illustrating and describing filters and elements for protecting diesel engines.

84 ROAD SCRAPERS; SNOW PLOWS: Root Spring Scraper Co. 18-page catalog illustrating and describing road scrapers, snow plows and hitches. Contains specifications.

85 LUBRICANTS: Lubriplate Division, Fiske Brothers Refining Co. 56-page data book on Lubriplate, brand name of the line of well known specialized lubricants produced in various type of fluids and greases for a wide diversity of applications. Lubriplate recommendations for trucks, tractors, quarry equipment and construction equipment are given in the data book, together with much information on various lubrication problems.

86 PERMANENT MAGNETIC MAGNETOOLS: Multofinish Manufacturing Co., Magnetool Division, 4-page technical bulletin describing the 16 most important exclusive permanent-magnetic magnetools.

87 MONOTUBE STEEL PILES: The Union Metal Co. 24-page catalog on Monotube fluted steel piles contains complete descriptive information and greatly simplified specifying data. Typical installations are illustrated and test driving data given.

88 ASPHALT PLANTS: Standard Steel Corporation. 4-page bulletin describes important improvements and special features of recently introduced RB series of asphalt plants in 500 to 5000 lb. batch capacities.

89 PATCHING UNIT: Hetherington and Berner, Inc. 2-page circular on the Moto-Patcher, a mobile mixing unit designed especially for speedy low-cost maintenance work on roads and streets. It delivers up to 10 tons of freshly mixed material per hour.

90 SANDBLASTING MACHINES: Sanstorm Manufacturing Co. 2-page bulletin on Sanstorm sand blasting machines. It is claimed these machines will not stop or plug when using any type of abrasive that will pass through the blasting nozzle. Four models are shown with data.

91 ASPHALT PLANTS: Standard Steel Corporation. 4-page bulletin describes the important improvements and special features of recently introduced RB series of asphalt plants, available in 500 to 6000 lb. batch capacities.

92 HYDRAULIC POWER STEERING BOOSTERS: Garrison Mfg. Co. 4-page circular on Garrison hydraulic boosters. These boosters are claimed to increase flexibility of graders, trucks and other equipment by easing steering effort. They also eliminate "wheel-fight" and kickback.

93 TRUCK SHOVEL: Quickway Shovel Co. 28-page booklet on Quickway truck shovel. Gives applications as a truck shovel and scoop; also contains a description of new front dump shovel just developed for underground work and places where overhead clearances are low.

94 TORQUE CONVERTERS FOR TRUCKS: Twin Disc Clutch Co., Hydraulic Division. 12-page bulletin explaining how truck-type 3-stage hydraulic torque converter drives improves performance, prolong equipment life and prevent operator fatigue in heavy hauling.

95 EARTH DRILL: The Buda Co. 2-page circular on Model Y1 earth drill, which drills holes 6 to 36 in. in diameter and up to 12 ft. in depth. It can drill vertical or angle holes.

96 CURB FORM CLAMPS: Pacific Engineering Sales Co. 4-page bulletin on Pacific all-steel clamps for wood curb forms which reduce nailing to a minimum and save lumber. One set of clamps adjusted for required width, batter and height can be used on any curb job in general use.

97 TIMBER RESEARCH: Timber engineering Co. 32-page booklet describing developments in engineering and timber research that have resulted in economies in time, material and labor in the use of lumber.

98 PRESTRESSED CONCRETE: Stressteel Corporation. Handbook describing large diameter, high strength steel tensioning units and their use in prestressing of concrete. These units consist of bars ½-in. to 1¼ in. in diameter and up to 80 ft. in length with end anchorages.

99 DIESEL ENGINES: Ingersoll-Rand Co. 16-page booklet containing wash drawings, installation views and diagrams to show why the T-S diesel engine is claimed to be a smaller, lighter but fully heavy-duty engine.

100 AIR TOOLS FOR CONSTRUCTION WORK: Schramm, Inc. 8-page bulletin, containing illustrations, descriptions and specifications for rock drills, wagon drills, paving breakers and attachments, breakers, diggers and tools, tampers and vibrators, pneumatic saws, and miscellaneous tools and hose.

101 TRAILERS AND SEMI-TRAILERS: Talbert Construction Equipment Co. 24-page catalog covering line of low-bed trailers, dump semi-trailers and mobile crane mounts. Line includes removable gooseneck heavy duty trailers in 10 ton to 75 ton capacities and fixed and removable gooseneck trailers in 10-ton to 30-ton capacities.

102 CONVEYORS: The Fairfield Engineering Co. 4-page catalog on conveyors for the construction field covers aluminum utility conveyor, heavy duty troughed belt conveyor, light weight troughed belt conveyor, bucket elevator and car unloader.

103 BATCH WEIGHING: Hardy Scales Co. 6-page folder on continuous automatic batch weighing. This system eliminates bottlenecks and weighs materials on continuous flow accurately, automatically, without interruption. Permanent printed record is provided.

104 JAW CRUSHERS: Smith Engineering Works. 8-page bulletin on Telsmith Jaw crushers. Contains table giving complete specifications and dimensions for nine sizes of crushers from 10 in. by 16 in., up to 30 in. by 40 in.

105 BACK-RIP SCARIFIERS: Preco Incorporated. 4-page circular illustrating and describing Preco back-rip scarifier. These are welded to reverse side of bulldozer blade and rip and scarify when bulldozer is backing up and float freely when blading forward.

106 BRIDGE FLOORING: United Steel Fabricators, Inc. 12-page booklet on USF structural plate bridge flooring. Includes a general description of the flooring, drawings of engineering details, design data and specifications.

107 LAND CLEARING WINCH: Al Evans Winch. 8-page catalog on Al Evans winch which was designed especially for clearing and grubbing. The winch has a drum shift giving two speeds and neutral. It has an adjustable handle dog assuring perfect mesh of pinion gear teeth at all times. It has two-speed power take-off transmission. The drum holds 550 ft. of ¾ in. cable.

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD

First Class Permit No. 52, Sec. 34.9, P. L. & R., Chicago, Ill.

ROADS AND STREETS

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CHICAGO 10, ILLINOIS

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ROADS AND STREETS

22 WEST MAPLE STREET

CHICAGO 10, ILLINOIS

My Name _____ My Title _____

My Firm or Govt. Dept. _____

St. Add. _____ City _____ State _____

Send me information about products advertised on:

Page ____ by _____ Page ____ by _____

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Send me more new equipment information on items circled:

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3/53 R&S

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3/53 R&S

4 powerful reasons why 1953 CHEVROLET Advance-Design Trucks give you more of what you want

MORE POWER—GREATER ECONOMY! Expect a wonderful advance in power, performance and economy in Chevrolet heavy-duty trucks! The great 1953 Loadmaster engine—standard on 5000, 6000 Series, heavy-duty and forward control models, optional on 4000 Series heavy-duty trucks—has a new high compression ratio of 7.1 to 1, develops even more horsepower than before. And the Thriftmaster engine in light- and medium-duty models brings you traditional Chevrolet economy.

TRUCKS ENGINEERED FOR YOUR PAYLOADS! Chevrolet trucks are designed for the job they will do—engineered from tires to axle, springs, clutch and power plant to do that job with the greatest efficiency and lowest cost. You don't waste money on too heavy a truck or too light a truck. You buy the *right* truck for *your* job!

MORE STAMINA! More strength where strength counts most! In 1953, all Chevrolet trucks have stronger, brawnier, more rigid frames. They have heavier, sturdier construction that means a longer, lower-cost life for your truck. And they have new larger, safer, longer lasting brakes on many models, too!

GREAT TRUCK FEATURES! In addition to the many *NEW* things you'll find in these 1953 Chevrolet trucks, you'll also find many great features yet unmatched by other makes of trucks. Features such as Flexi-Mounted Cabs, Unit-Designed Bodies, Ball-Gear Steering and many others help make Chevrolet Advance-Design trucks your greatest buy. Chevrolet Division of General Motors, Detroit 2, Michigan.

CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

TWO GREAT VALVE-IN-HEAD ENGINES—the Loadmaster or the Thriftmaster—to give you greater power per gallon, lower cost per load. **POWER-JET CARBURETOR**—for smooth, quick acceleration response. **DIAPHRAGM SPRING CLUTCH**—for easy-action engagement. **SYNCHRO-MESH TRANSMISSION**—for fast, smooth shifting. **HYPOID REAR AXLE**—for dependability and long life. **TORQUE-ACTION BRAKES**—on light-duty and medium-duty models and on front of heavy-duty models. **TWIN-ACTION REAR BRAKES**—on heavy-duty models. **DUAL-SHOE PARKING BRAKE**—for greater holding ability on heavy-duty models. **CAB SEAT**—with double deck springs for complete riding comfort. **VENTI-PANES**—for improved cab ventilation. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—for easier handling. **UNIT-DESIGNED BODIES**—for greater load protection. **ADVANCE-DESIGN STYLING**—for increased comfort and modern appearance.

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in value
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You Store Equipment; Why Not Store Facts and Ideas in a Real

Construction Data File

Most contractors shy away from "paper work." Here is a discussion which will interest office managers, the boss' secretary, or perhaps the contracting firm's skipper, himself. Good reading for companies which have outgrown the "small outfit" stage and need to organize their data library for estimating and purchasing purposes

By E. T. Nettleton
Associate Highway Engineer
State Highway Department of Connecticut, Hartford

MOST of the construction projects in the United States are built by private contractors. The work is awarded to them under a highly competitive system of bidding. In order to exist private concerns must make a profit. This forces the key executives of contracting concerns to be practical men. It is strange, therefore, that ninety-nine per cent of the contractors overlook the value of an adequate and practical construction data file. Perhaps this oversight is similar to the man in the woods who could not see the extent of the forest because of the trees. The construction data file should include technical articles, equipment catalogues, cost, and production statistics.

There are many logical excuses why such information is not retained, nor even filed in a manner both convenient and readily available. Most of the calendar year executives and key construction men work long hours. There is little time available for technical reading and research. The time consumed by these gentlemen in technical advancement comes from two sources: practical field experience of the individual, or from conversation with high pressure salesmen, which is usually carried on under duress at an inopportune time. The average contractor is so occupied with his own immediate problems that he fails to take cognizance of his future problems. Little does he realize that the data obtainable today may be of considerable use to him tomorrow in solving his problems at that time: The installation of a technical library or the upkeep of an adequate construction data file, is too theoretical, too time consuming, and of no immediate value to him.

File of Articles

The top executive subscribes to a few trade magazines. At various intervals these magazines are placed on his desk. If he is not too busy, he may look at the index. Perhaps the title of one article is of interest to him because he had recently had a similar problem. He plans sometime in the future, to read this article. Promptly he initials the cover and passes it on to other key men who are also busy.

They initial the magazines and pass them on. Finally they accumulate on the last key man's desk. After the accumulation is so great that it impairs the desk operations of the junior executive, the office boy is called and the magazines are relegated to the cellar or attic. The covers of the magazines may be marked with as many initials as an oak tree near a playground. A perusal of a magazine may reveal that there are still leaves fastened together which in error were not properly trimmed by the publisher. Nevertheless, the cost of all these periodicals does not amount to over a hundred dollars per year, payable in driblets. What is that to a concern doing a half million or more dollars worth of work per year?

Contractors receive all kinds of equipment catalogues, but, at the time, the contractor may not be in a position to buy. Usually these catalogues are thrown into the waste basket or put in the cellar to accumulate dust. Those few pamphlets which pertain to equipment owned are sent to the garage or shop. The shop foreman places them on top of his desk or on a shelf. In a month or two the pamphlets may be borrowed but often it is not returned. If it is returned, it is too weather beaten, too oily, or too greasy to read.

Job Cost Data

Sometimes cost and production statistics of various projects are kept by a superintendent, foreman, timekeeper, estimator, or cost clerk. What are the results? These valuable figures may be kept somewhere by the person making the study. When the figures are most needed the employee may be on vacation or he may have severed his connections with the concern. Perhaps one executive has received a copy of the figures. The drawers of the executive's desk are not large enough to retain all data received. Into the file basket the information goes. Eventually some stenographer files the information in the general files. The day the information is wanted, the stenographer is out sick. Nobody knows under what classification such information may have been filed. It is too bad, but the contractor in his hurry (he is always in a hurry) must bid without this information regarding past production rates. On the first working day of January these records in the general files are placed in cardboard transfer files in the cellar or attic.

After several years this accumulation of technical magazines, equipment pamphlets, and general correspondence acquire mold in the cellar, or serve as a nesting place for rats in the attic. Eventually lack of space, the complaints of a stenographer, or the serving of notice by the fire marshal forces the office executive to call a waste paper dealer. The latter cleans out the debris and makes a small token payment. Everybody is happy to have the junk cleaned out.

Was this material all junk? Probably under the circumstances one might agree that it was, especially

Why's of a Contractor Data File

The author, a veteran construction engineer, suggests:

1. *Why not an orderly place for catalogs, data sheets, cost records, etc?*
2. *A flood of technical magazines come over your desk. Clipped articles can be referred to later when you need them, only if properly filed.*
3. *An occasional data "nugget" may pay for the small expense of keeping up the file.*
4. *You store your equipment during the off season — why not store your ideas, facts and figures for ready use?*

Suggested Index for Construction Data File

A—1	Accident Prevention
A—2a	Aggregates—Sand
A—2b	Aggregates—Stone and Gravel
A—3	Airport Construction
B—1	Bids, Contracts and Legal Phases
B—2	Bituminous Road Construction
B—3	Breakwater Construction
B—4a	Bridge Construction — Concrete
B—4b	Bridge Construction—Steel
B—4c	Bridge Construction—Temporary
B—5	Bulkheads
C—1	Camps
C—2	Castings
C—3	Cement
C—4	Clearing and Grubbing
C—5	Collections
C—6a	Concrete Construction—General
C—6b	Concrete Construction—Plant Layouts
C—6c	Concrete Construction—Mixing Plants
C—6d	Concrete Construction—Shotcrete
C—6e	Concrete Construction—Pumpcrete
C—6f	Concrete Construction—Vacuum
C—6g	Concrete Construction—Forms
C—6h	Concrete Construction—Tybars
C—6i	Concrete Construction—Joints
C—6j	Concrete Construction—Air Entraining
C—6k	Concrete Construction—Finishing and Curing
C—7	Cost Keeping Data
D—1	Dam Construction
D—2	Depreciation and Depletion
D—3a	Dewatering—Cofferdams and Caissons
D—3b	Dewatering—Pumping
D—3c	Dewatering—Well Points
D—4	Drainage Structures
D—5	Dredging
E—1	Employment
E—2a	Engineering—General
E—2b	Engineering—Societies
E—3a	Equipment—Rental Rates
E—3b	Equipment—Small Equipment
E—3c	Equipment—Power Shovels
E—3d	Equipment—Power Scrapers
E—3e	Equipment—Tractors & Bulldozers
E—3f	Equipment—Power Graders
E—3g	Equipment—Power Rollers
E—3h	Equipment—Mixers
E—3i	Equipment—Finishing Machines
E—4a	Erection—Plant and Equipment
E—4b	Ercetion—Steel
E-4c	Erection—Timber
E—5	Estimating
E—6a1	Excavation—Earth—Power Shovel
E—6a2	Excavation—Earth—Crane
E—6a3	Excavation—Earth—Scraper
E—6b1	Excavation—Rock—Drilling
E—6b2	Excavation—Rock—Blasting
E—6b3	Excavation—Rock—Loading
F—1	Fences
F—2	Financing
F—3	Fire Protection
F—4	Footings and Foundations
G—1	Geology
G—2	Grouting
H—1	Hauling
I—1	Inspection
I—2	Insurance
L—1a	Labor—Regulations
L—1b	Labor—Supply
L—1c	Labor—Wages and hours
L—2	Laws
L—3	Literature—Index
M—1	Macadam Road Construction
M—2	Management Policies
M—3	Masonry Construction
M—4	Military Construction
M—5	Mud Jacking
O—1	Office Supplies and Equipment
P—1	Patents
P—2	Parking Area Construction
P—3	Physical Examinations
P—4	Pile Construction
P—5a	Pipes—Concrete
P—5b	Pipes—Corrugated Metal
P—5c	Pipes—Cast Iron
P—5d	Pipes—Clay
P—6	Painting
P—7	Publications
P—8	Purchasing
Q—1	Quarrying
R—1	Railroad Construction
R—2	Rigging
R—3	Rip Rap Construction
S—1	Salvaging Operation
S—2	Scaffolding
S—3	Seeding and Loaming
S—4	Selling
S—5	Sewage Disposal Construction
S—6	Sheeting
S—7	Sidewalk Construction
S—8	Small Tools
S—9	Snow Removal
S—10	Soil Stabilization
S—11	Specifications
S—12a	Steel—Reinforcing
S—12b	Steel—Structural
S—13	Street Openings
S—14	Subgrades
S—15	Surveying
S—16	Swimming Pool Construction
T—1	Tennis Court Construction
T—2	Trade Associations
T—3	Traffic Control Methods
T—4	Trucks
T—5	Tunnel Construction
U—1	Union—Rules and Agreements
U—2	Unloading Pits
W—1a	Water Construction—Lighters and Barges
W—1b	Water Construction—Navigation Rules
W—1c	Water Construction—Towing Rates
W—2	Water Tanks
W—3	Waterproofing
W—4	Weather Statistics
W—5	Welding and Cutting
W—6	Wells
W—7	Winter Construction

The reader will note that this index is capable of expansion to any degree. For example, a contractor might wish to include "Trailer Transportation." This could be assigned as T-6 and inserted into the file cabinets in the proper place. Then again, the file order on "Excavation—Rock-Drilling" might become bulky. The subject could then be brokne down into two parts, namely "E-6-b-1-A Excavation—Rock—Drilling—Wagon Drills" and "E-6-b-1-b Excavation—Rock—Drilling—Jackhammers."

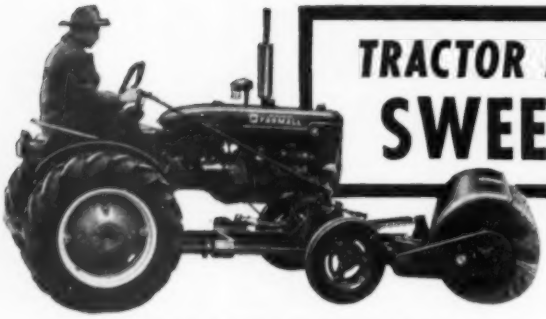
since the contractor was making no practical use of the material. Nevertheless, in this process of cleaning up, there was considerable information destroyed that at sometime or other the contractor would be most desirous of knowing. In this particular case the contractor who thought he was practical in all respects has committed an impractical act, which directly or indirectly may cost him many dollars without his realization of the loss.

The question now arises regarding the manner in which a contractor may retain this knowledge, or have this information readily available at his beck and call. Certainly no executive has time to read all technical magazines, equipment pamphlets, and production - cost records. Furthermore, he would not be able to memorize and retain this information in his mind. The indiscriminate placing of unclassified records in the cellar or attic does not answer the problem.

The solution is so easy that it appears strange that contractors, practical as they are supposed to be, have not made use of such a simple method. The solution lies in the adoption and upkeep of a simplified construction data file.

A construction data file to be most serviceable with the least amount of effort must eliminate any complicated system of classification, any technical training in filing, and any duplication of indexing. Furthermore, the adopted system must be expandable. Last, but by no means least, the desired information should be obtainable by going to the file cases, pulling out one drawer and lifting out one file pocket.

One system has been used successfully for the past twenty-seven years by an engineer in both contracting and engineering. Faced with insufficient time to read all the technical, scientific, business and construction articles, equipment catalogues and cost - production statistics which passed over his office desk, or which were received by mail at his home, he



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glanced over the index or titles daily. Perhaps five per cent or less of the articles were of immediate interest. These were read. The index or titles of the ninety-five per cent were glanced at. From quick observation, it was quite evident that about eighty-five per cent of the subject matter was of no concern to the past, present, or expected future endeavors of the engineer or of his business affiliations. This subject matter immediately went into the waste basket. The ten per cent remaining, plus the five per cent read, was ripped out, stapled, classified, and filed. The total time consumed averaged ten to fifteen minutes per working day. It is estimated that for every ten articles filed, only one is ever used. Nevertheless, the time consumed in filing the nine which were not used was paid off a thousand times by the knowledge gained from the one article which was used.

Referring to the file takes less than a minute to pull out the pocket folder containing information on the desired subject. In a matter of minutes, the titles and subject matter of the technical information which has been filed over the past quarter century on this subject is scanned. Perhaps from five to fifty articles may be included in the file pocket, of which three to five may have a direct bearing on the subject desired. After five or ten minutes of reading, the answer is available. Without such a system, one might spend days or pay a consultant a large amount in order to obtain this information. The alternative would be to proceed without the knowledge. It is quite evident that information, knowledge, opinions, and the statistics stored up in such a file cannot possibly be acquired by any engineer or contractor in the span of a single life time. Even if such a thing were possible, no human brain could retain all the information.

Has Many Uses

This file serves as a handy reference on legal, technical, operating, purchasing, estimating and business problems. It has been used in the revision of specifications, the establishment of standards of safe practices, and the adoption of economical procedures in field construction. One particular small field problem was presented wherein it was estimated that cost of doing this part of the work would be $1380. Neither the superintendent nor executives of the concern could suggest any solution which was more economical. Referring to the files, an article concerning a certain unusual construction method which had been used three years previously by a contractor located two thousand miles away was found. This article provided the answer. With a slight revision in technique the idea was carried out and the $1380 item cost the contractor exactly fifty dollars. The limited length of this article prevents the description and listing in detail of the many practical adaptations. Needless to say, those contractors who overlook the practical value of a simplified construction data file are penny wise and pound foolish.

For the reader's convenience, a suggested typical index for a construction data file, applicable to the average contractor, is listed as an addendum to this article. The code numbers and letters permit further breakdown and expansion of any one item when the folder becomes unwieldy.

(Any opinions expressed in the above article, which is reprinted herewith by permission from "Nerba," are those of the author, and do not necessarily reflect the views of the State Highway Department of Connecticut. This article may not be reprinted without the permission of the author. —Editor.)

Pavement raised with jacks

The Texas Highway Department maintenance crew in District 18 recently leveled 11 miles of one-lane concrete pavement by using railroad-type step jacks to raise low or tilted slabs and restore them to grade.

This road, on State Highway 205 in Rockwall County, was paved in 1923 or 1924, with a pavement only 8 ft. wide with gravel passing sites at intervals. The raising was done in connection with widening and modernization.

The dirt shoulders were first bladed away alongside the slabs to be raised. The jacks were then set in position along the pavement edge and operated to hoist a slab the desired interval, after which screenings were placed and tamped under the slab as far back as conditions would permit. The jacks were then removed and carried forward to the next location. Directly following the slab-raising, a slurry was pumped through previously drilled holes in the pavement to fill all voids under the raised slab. About 9,000 lineal ft. of slab was thus raised.

Detroit Diesel Sales Appointments. Several additions to the field organization of the Detroit Diesel Engine Division of General Motors, required to man newly created sales zones, have been announced by V. C. Genn, general sales manager. C. J. Davy, who has been with Detroit Diesel's Petroleum sales department since 1945, has been appointed sales representative of one of the new zones which includes Alabama, Georgia and Florida. R. J. Hines, formerly associated with a Detroit Diesel distributor, has been assigned in a similar capacity to Eastern New York, Eastern Pennsylvania, New Jersey, Maryland and Delaware. J. R. Sayward, R. T. Hair, C. J. Saurer and H. S. Pillsbury, former instructors in Detroit Diesel's mobile training schools, have been added to the field service staff.

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* * * * *

LIMA—TYPE 34—New February, 1946—SERIAL NO. 3506. ¾ yard dipper—17 ft. sticks; GM-371 Diesel engine; 12 ft. 3 in. crawlers; 30 in. treads.

* * * * *

LIMA—TYPE 34—New September, 1946—SERIAL NO. 2839. ¾ yard dipper—17 ft. sticks; GM-371 Diesel engine; 11 ft. crawlers; 22 in. treads.

* * * * *

LIMA—TYPE 34—New October, 1947—SERIAL NO. 3824. ¾ yard dipper—17 ft. sticks; GM-371 Diesel engine; 12 ft. 3 in. crawlers; 30 in. treads.

* * * * *

LIMA—TYPE 34—New January, 1947—SERIAL NO. 2946. ¾ yard dipper—17 ft. sticks; GM-371 Diesel engine; 11 ft. crawlers; 30 in. treads.

* * * * *

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* * * * *

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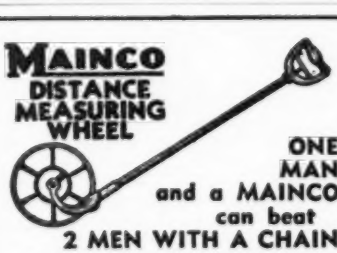

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10.	1 Used Jaeger, aggregate and asphalt spreader Model SPS1-W, self propelled, powered by Continental F 226 Gasoline Engine. (This machine was purchased in 1951 and has laid less than 1000 tons of material.) Original cost $6,000.00. Now only	4,500

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Corner Highways 30 and 149 **Cedar Rapids, Iowa**

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1—International Model TD24 diesel crawler tractor, 6 roller, 26" clip cornered shoes, canopy top, Ser. No. 2565, and equipped with Bucyrus-Erie double drum power control and cable operated bulldozer. First put in our rental service in January of 1951. All of the latest International Harvester improvements have been incorporated in this tractor and the running gear has been completely rebuilt and repaired.

Current price f.o.b. New York $25,790

OUR PRICE R&G $16,000.

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EQUIPMENT FOR SALE

(All 1951 Models)

3—DW-20 CATERPILLAR Tractors and Scrapers

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1—210 CU. FT. SCHRAMM COMPRESSOR (on 4 pneumatic wheels)

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1952 LF195

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Equipped with F54 Trans. and 2631 Aux. Trans., Tires 1000x20 front—900x20 rear. Low mileage, very clean.

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Exceptionally Attractive Price

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Backhoe attachment for B.E. 22B.
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Cat. D4 with hyd. Bulldozer 7U6298.
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Bucyrus-Erie 10B Shovel. Good
Duro-way Scoopmobile A-1 Condition
LaPlant-Choate TS-200 Motor Scraper
D2 w/ Traxson cable loader
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Size 6x3x6

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Transit 2 Yard
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Caterpillar 50 With Sideboom	2,150.00
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Galion Grader
118 ..... $8500.00
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3 TO 6 TON TRUCKS

1—White WB28 w/2 spd rear end	$1250.00
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1—International TD24 with cable blade $14,000.00
1—Caterpillar D8 8R Series with hydraulic blade $ 7,000.00

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PHILIPSBURG, PA.

USED INVENTORY REDUCTION PLAN

Adams—303 motor grader
Adams—302 motor grader
Adams—412H motor grader
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Bucyrus-Erie—Conversion straight dozer attachment—TD-9 & TD-18A
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Chevrolet—1½ ton, '49 truck, 12' flat steel bed with grain sides, hydrrulic dump
Clark—Shop towing tractor
Hebard—Shop towing tractor
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Hough—HM Payloader
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IHC—1b 1½ hp power unit
IHC—U-1 power unit
IHC-I-30 wheel tractor
IHC-TD-18 and Heil cable dozer
IHC-TD-14s and dozers
IHC-TD-9 and Bucyrus-Erie Loader
IHC-TD-9 and hydraulic bulldozer
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Kwik-Mix-65 building mixer
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Engine Power Unit—Cat Diesel D13000Y, ser. #3S1761. Heavy duty V8, 190 HP Diesel eng., just out of our Paducah shop; looks and runs good. Priced way below market. FOB Paducah, Ky. $5,600.00

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P&H Model 255 ¾ yd. Crawler with generator and controls, A-1 Cond. $7,900.00
Caterpillar Diesel Crawler Tractor Model 50 ..... $2,500.00
Austin Western 7 Ton 3-Wheel roller with Buda Diesel Engine $2,100.00
Austin Western 2 yd. Sweeper, 1945 Model. Good condition $2,300.00

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1950 Michigan Backhoe, model T6K, 6 cylinder gas motor, pneumatic tires, air controls and brakes. ⅜ yard 28" bucket. Excellent condition ..... $ 9,000
1951 Lorain Backhoe, model TL25J. Cat. diesel 315 power, crawler mounted with 36" bucket. This machine in new condition with only 800 hours use $15,000
Will consider rental purchase on Michigan and Lorain prior to March 1st, 1953.

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2—4500 Manitowoc Draglines, Caterpillar 386 diesel, 140' Boom, air controls and light plant. Purchased 1951. $12,800.00 FOB Cars.
1—L50 Lorain Shovel, Caterpillar 318 diesel, Opr. 800 hrs. ..... $24,000.00 FOB Cars.
1—TL25 Lorain Shovel, Caterpillar 318 diesel, Opr. 700 hrs. ..... $12,500.00 FOB Cars.
1—22T Bucyrus-Erie Blast Hole Drill, Opr. 100 hrs. ..... $4,000.00 FOB Cars.

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1—A-C Model HD14C Tractor, equipped with Pusher Plate, Serial 6177.
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2—International TD-9 Tractors equipped with bulldozers.
1—D8 Caterpillar Tractor, Ser. 2U-3441, equipped with Model 25 Double Drum PCU and Cat. Angle Dozer.
All equipment located at Oklahoma City, Oklahoma.

Ask for Mr. Grayson Phillips

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FERGUSON CORPORATION
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FOR SALE
60 to 80 Ton Standard Steel
ASPHALT CONCRETE PAVING PLANT
Run 7000 tons

BARBER-GREENE FINISHING MACHINE
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GALION 8 TO 10 TON ROLLER
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900 GALLON DISTRIBUTOR
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MODEL "S" QUICKWAY

LAWRENCE T. HAAS
GENERAL CONTRACTOR
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1945 D4 Caterpillar tractor with Athey overhead loader attachment, half yard bucket, and dozer blade attachment. Very good condition. $3,300.00.

1942 Austin-Western diesel grader, Model D. S., equipped with V plow, wing plow, and scarifier. Very good condition. $3,800.00.

Model 70 Caterpillar scraper, 8 to 11 yd., round bottom. Like new. $6,000.00
Trojan grader with cab. 12 ft. blade. Model M Serial FBK 164259.

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3 Model A Tournapulls, with E-35 Scrapers. Excellent shape. Make offer.

3 TD24's.

Euclid Loader—$6000.00.

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130 ALL STEEL WATT MINE CARS WITH ROTARY DUMP

WE HAVE LEFT A FEW:

8 and 10 ton Westinghouse, Jeffrey and Goodman Locomotives.

7AU Universal Track Mounted Cutting Machines.

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Numerous new parts, never taken out of our supply house, for Westinghouse, Jeffrey and Goodman Locomotives, Sullivan Cutting Machines, Goodman 460 Track Loaders.

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Numerous Motors.

All can be purchased at a very low price.

This equipment from Emily Mine of the

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International TD-24

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Gar Wood 524 Scraper, Serial 524S17

Gar Wood 524 Scraper, Serial 524S19

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ALL EQUIPMENT IS IN GOOD OPERATING CONDITION AND READY TO GO TO WORK.

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1500 watt automatic light plant	800.00
750 watt-150 volt-16 cycle light plant	350.00
Warco Motor Patrol, solid rubber	500.00
Cleveland Form Grader	2,500.00
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8" Paving Forms, excellent condition	65¢ per foot
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P&H 855 2 cubic yard Shovel, Caterpillar

D-17000 Diesel Engine 1946.
Price $28000.00

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1—BUCYRUS-ERIE Model 37-B 1 ½ yd. shovel w/ Buda Diesel $11,500.00

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BAY CITY 30, ½ Yd. Crawler Hoe Machine, 30" Bucket, Caterpillar Diesel Engine. Serial #5043.

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New Bay City Hoe Attachment, complete with 36" Hoe Bucket for Bay City Model 25 or 30, ½ Yd.

Used Bay City Hoe Attachment, complete, as above, but 30" Hoe Bucket.

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3½-S Jaeger Tilting (End Dischg) on 2 PT—AKN Wis. Eng. $325.00

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4 1947 Sterling H.D. dual chain drive tandem dump trucks

8-10 yard extra H.D. bodies. Three speed auxiliary Sterling trans. with O.D. Wt. 28,000 lbs. Excellent condition. Will sacrifice on account of local weight laws.

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8 1064 White Diesel Tandems
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A-C Model HD14 Tractor w/ angle-dozer.

A-C Model HD10W Tractor w/ angle-dozer.

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A-C Model L Tractor w/ bulldozer.

A-C Model WK Tractor.

A-C Model AD-3 motor patrol w/ cab & scarifier.

International TD-6 w/ hyd. bulldozer. Clean.

International TD-6 Tractor w/ bulldozer.

International TD35 Tractor.

Caterpillar D-6 Tractor A1 w/ Model 25 P.C.U. & C60 Scraper.

M & M Model RTI wheel tractor w/ loader.

Hough Model HF Payloader, rebuilt.

A-C Model AD-3 Motor Patrol.

A-C Model D Motor Patrol.

Adams Model 414 Motor Patrol.

A-C Model B wheel tractor w/ mower.

LeTourneau Y-12 Scraper.

LeTourneau J-6 Scraper.

Unit Model 514 Dragline.

Northwest Model 18 Dragline.

Buckeye Model 402 Ditcher.

Gar Wood Model 25 Scraper.

1—Bros Model SG-55 skid mounted steam generator.

Slusser-McLean 8-10 yd. cable scraper. Slightly used.

1—Novo traffic line marker.

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Stearns Joltcrete No. 7 Block Machine complete, in good running condition—elect. switch boxes, extra vibrator motor—two 8" mold boxes & pressure heads—one 4" mold box & pressure head—pressure heads for 8" corners, sash, pilaster and bull nose blocks—cores & pressure heads for 8" halves in commons corners, sash and bull nose—4200 4" steel pallets—2900 8" steel pallets—450 8" corner pallets—200 8" sash pallets—150 8" pilaster pallets—600 8" half pallets for commons, corners, sash, bull nose—check plates & attachments for 8" bull nose—both round & single round corners—one Stearns Hydraulic Off Bearer—all cleaned & ready for immediate use.

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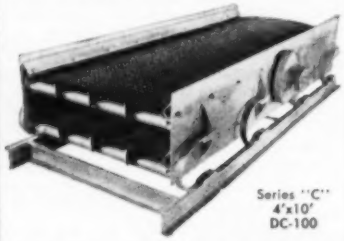

Series "C"
4'x10'
DC-100

KOLMAN'S new Series "C" screens deliver vigorous action to give high capacity and more accurate sizing—yet "floating" action that prevents transmission of damaging vibrations to attached equipment. You save on initial cost, save on operating expense, get an all-around "better shake" with a KOLMAN. Write today for FREE folder illustrating single and multi-deck models.

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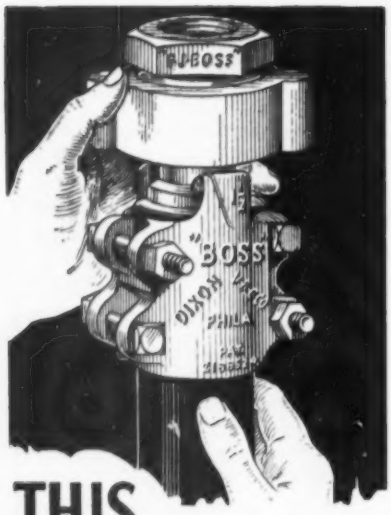

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INDEX TO ADVERTISERS

Ace Construction Co. 147
*Adams Mfg. Co., J. D. 43
*Allis-Chalmers 2nd Cover
American Cable Div. (American Chain & Cable Co.) 55
*American Steel & Wire Div. (United States Steel Corp.) 53
Anderson Equipment Co. 142, 143, 144, 145, 148, 149
Arps Corporation 94
Arthur or Morris 144, 145, 150
Astlett & Company, Inc., H. A. 118
*Austin-Western Company 37

*Barber-Greene Company 99
Bethlehem Steel Co. I
Boardman Co., The 146
Brennan Bros. 149
Buchanan-Rooney Equipment Co. 143
Bucyrus-Erie Company 44
Buhl Machine Works 58
*Butler Bin Company 28

C. H. & L. Machinery Co. 149
Camm Manufacturing 94
Caterpillar Tractor Co. 5, 64, 3rd Cover
Central Machinery Co. 149
Central Supply & Equip. Co. 144
Century Engineering Co. 118
*Chevrolet Division of General Motors 137
Choate Equipment Co. 144
Cianchette, J. R. 150
*Cleaver-Brooks Co. 98
*Clipper Mfg. Company, The 59
Consolidated Industries, Inc. 116
Constructors Equipment Co. 150
Contractors Machinery Co. 150
*Cummer & Son Co., The F. D. 101

Dalton Supply Co. 150
Denise Coal Company 150
*Detroit Diesel Engine Division 60
Dewey and Almy Chemical Co. 108
Diamond Iron Works 61
Dick Construction Co. 149
Dixon Valve & Coupling Co. 152
Dotmar Industries, Inc. 24
Dow Chemical Company, The 32
Driscoll, A. M. 146

*Eagle Crusher Co. 95
Eastcoast Equipment Co. 147
Edgington, R. V. 145
Eimco Corporation 25
Ellis Company, The 150
Ely, Gene 146
Fabert Const. Co. 149, 150
*Felker Manufacturing Co. 42
Ferguson Corporation 146
Fishel, Al 145
Fitzerman Co., M. E. 148
Flack Equip. Co. 148
Flexo Corporation 4
Foote Co., Inc., The 128
Forbes Motor Co. 148
Ford Motor Co. 19
Fort Dodge Tent and Awning 54
Frazier-Davis Construction Company 142, 145
Fuchs-Clayton Machinery Company 145
Fulton Auto Exchange 142

*Galion Allsteel Body Co., The 54
*Galion Iron Works & Mfg. Co. 38-39
*Gar Wood Industries 57, 126-127
*General Motors (Chevrolet Division) 137
Gilson Brothers Co. 95
Goodread, Ernest A. 142
Goodyear Tire & Rubber Co. 3
Grace Manufacturing Co., W. E. 118
*Gradall Division of the Warner & Swasey Co. 10
Grote Manufacturing Co. 58
Grote Manufacturing Co. 147
Gruendler Crusher & Pulverizer Co. 145
Gulf Oil Corporation 45

Haas, Lawrence T. 146
Hamilton & Son, L. J. 146
*Harnischfeger Corporation 29, 107
*Hauck Manufacturing Co. 115
Heil Co., The 26-27
*Heltzel Steel Form and Iron Co. 18
Hooker, Harold W. 142
Hopkins Volcanic Specialties, Inc. 114
Hotel Venetian 24
*Hough Co., The Frank G. 11
*Huber Mfg. Co., The 119
Hudson Company, A. E. 146
Hunter Tractor & Machinery Co. 146
Hyster Company, The 8

Illinois Road Equipment Co. 148
Industrial Wiping Cloth Co., Inc. 24
Ingersoll Co., The Chas. M. 144
International Harvester Co. 40-41
International Truck Dealer 144
Iowa Manufacturing Co. 16-17

*Jackson Vibrators, Inc. 117
Jaeger Machine Co., The 33
John Trailer Div. (Pressed Steel Car Co. Inc.) 123
Johnson Company, C. S. 34-35

Kaolin Co., Georgia 141
Kaplus, Inc., David B. 143
Koehring Company 34-35
Kolman Manufacturing Co. 148
Kwik-Mix Company 34-35

Leschen & Sons Rope Co., A. 122
LeTourneau, Inc., R. G. 12-13
Lindekugel & Sons, G. H. 145
Link-Belt Speeder Corp. 21
*Littleford Bros. 56, 101
Louis Co., Inc., John C. 141

McConnaughay, K. E. 100
Madson Iron Works, Inc. 115
Maguire Industries 102
Maintenance Co., Inc., The 143
Marchese Bros., Inc. 147
Marion Metal Products Co. 30
Meili-Blumberg Corporation 140
Meyer Bros. Company 145
*Michigan Power Shovel Co. 67
Miller Research Engineers 24
Minar Company, The 144
Minnis & Shilling and United Concrete Pipe Corp. 144
Mississippi Valley Equipment Co. 143, 149
Moeller Company, R. G. 141, 142
Moline Iron Works 42
Monarch Road Machinery Co., The 42
Monongahela Rail and River Coal Co. 147
Montpelier Stone Company 150

Natural Rubber Bureau 9
North Texas Eqpt. & Supply Co. 147
North-West Wire Rope Co. 144
Northwest Engineering Co. 23

*Onan & Sons, Inc., D. W. 88
*Osgood-General 48
Overman Mfg. Co., I. J. 115

Paper Calmenson Co. 49
Parson Company 34-35
Patterson Equipment Co., Inc., The 147
Perfection Steel Body Co. 22
Poole, Edwin R. 141
Portland Cement Association 36
Posey Iron Works, Inc. 113
RCA Engineering Products—Communications 91
Radandt Sons, Fred 141
*Republic Steel Corp. 111
Roadgrader Gauge Corp. 93
Roebling's Sons Co., John A. 14-15, 31
*Rogers Bros. Corporation 125
Rosco Mfg. Company 116
Ruemelin Manufacturing Co. 58

*Schramm, Inc. 20
Schult Corporation 118
Sculley Company 147
Service Supply Corp. 147
*Servicised Products Corp. 58
Shirley Equipment Co. 114
Sisalkraft Company, The 56
Smith & Co., Frederick G. 148
Smith Co., H. Y. 149
Square Deal Machinery & Supply Co. 142
*Standard Steel Corp. 124
Standard Steel Works 120
Stewart Equipment Co., Inc. 143
Stovall Co., R. B. 143
Swenson Spreader & Mfg. Co. 120
*Syntron Company 89
Testa Bros., Inc. 143
Texas Company, The 6-7, Back Cover
Thorp Finance Corp. 141
*Thurman Machine Company 52
*Timken Roller Bearing Co. Front Cover
Tire Mart 149
Tractor & Equipment 149
Triangle Construction Co. 145
Troyer, Stanley B. 148
Tulsa Eqpmt. Co., Inc. 145
Ulland Brothers 142
Union Wire Rope Corporation 96
United Concrete Pipe Corp. and Minnis & Shilling 144
United Hoisting Co., Inc. 144
United Sales Corporation 150
United States Steel Corp. (American Steel & Wire Div.) 53
United Steel Fabricators, Inc. 92
Universal Engineering Corp. 47
Vandeventer Auto Sales 149
*Vulcan Tool Mfg. Co. 94
*Warner & Swasey Co. 10
Watson Co., Inc., Emmett C. 143
Wellman Company, S. K. 63
*Wellman Engineering Co., The 52
Wells Co., Seward S. 147
Wenzel Machinery Rental & Sales Co. 149
Whayne Supply Co., Ray C. 146
White Mfg. Co. 115
White Motor Co., The 46
White Tractor Parts & Equipment 148
Wilmoth Paving Co. 151
Wilson, Lyle 142
Wood Manufacturing Co. 90
Wylie Manufacturing Co., Inc. 113
Yaeck, Wm. 150
Zeligson Truck & Equipment Co. 147

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Above photos show Texaco Asphaltic Concrete, under construction and completed, on another section of the Parkway. The contractor was Cold Mix, Inc., Port Chester, N. Y.

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